

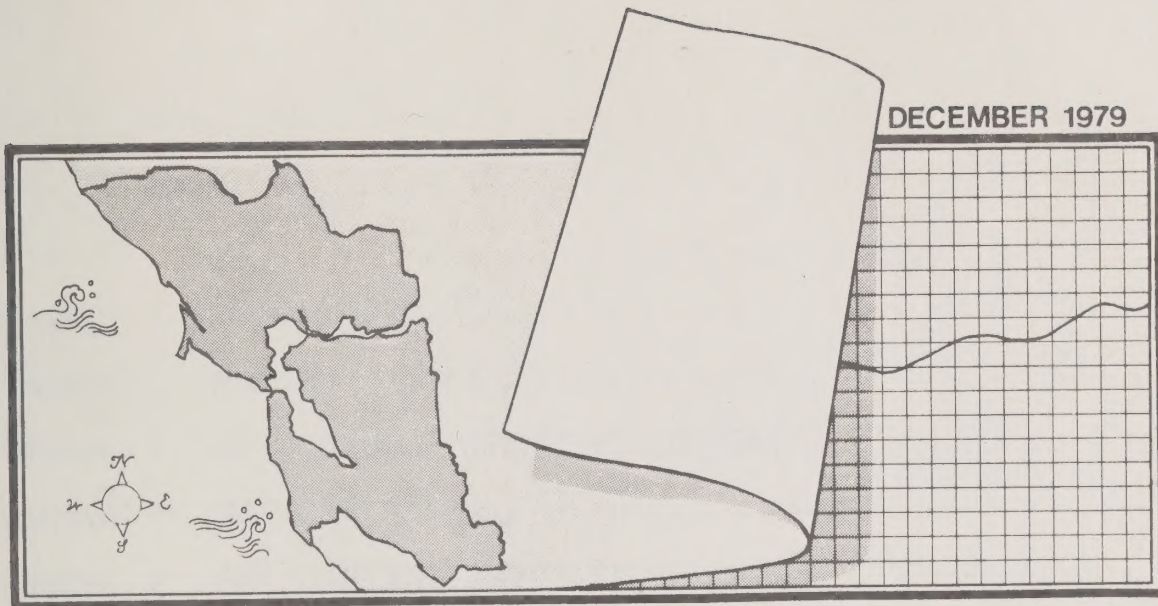


San Francisco Bay Area ECONOMIC PROFILE

 **ABAG**
ASSOCIATION
OF BAY AREA
GOVERNMENTS

**BAY
AREA
COUNCIL**

7902825




San Francisco Bay Area ECONOMIC PROFILE

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

APR 12 1996

UNIVERSITY OF CALIFORNIA

 **ABAG**
ASSOCIATION
OF BAY AREA
GOVERNMENTS

**BAY
AREA
COUNCIL**

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

APR 12 1996

UNIVERSITY OF CALIFORNIA




San Francisco Bay Area ECONOMIC PROFILE

DAVIS
PUBLICATIONS
SAN FRANCISCO

Second Printing, July 1980

TABLE OF CONTENTS

	<u>Page</u>
List of Tables	v
List of Figures	xi
Preface	xv
Chapter 1 INTRODUCTION	1
Chapter 2 FINDINGS	3
Chapter 3 AN OVERVIEW OF THE BAY AREA ECONOMY	7
Chapter 4 THE ECONOMIC BASE	13
Chapter 5 HIGH-TECHNOLOGY MANUFACTURING	25
Chapter 6 THE OFFICE INDUSTRY	37
Chapter 7 TOURISM	49
Chapter 8 THE FOOD INDUSTRY	55
Chapter 9 LONG-DISTANCE TRANSPORTATION	67
Chapter 10 THE PUBLIC SECTOR	81
Chapter 11 CHARACTERISTICS OF THE LABOR FORCE	89
Chapter 12 PRODUCTIVITY IN BAY AREA MANUFACTURING INDUSTRIES	101
Chapter 13 LAND DEVELOPMENT PATTERNS	113
Chapter 14 MAJOR EMPLOYMENT CENTERS	121
ACKNOWLEDGEMENTS	213



Digitized by the Internet Archive
in 2025 with funding from
State of California and California State Library

<https://archive.org/details/C124924104>

LIST OF TABLES

<u>Table</u>	<u>Page</u>
3.1-1 Population Growth By Standard Consolidated Statistical Areas: 1960-1976	7
3.2-1 Overall Employment Growth, 1960-1978, Bay Area, California, and United States	8
3.4-1 Comparative Employment Shares, Bay Area, California, and United States: 1960-1975	11
4.2-1 Regional Employment: 1972-1978	15
5.3-1 High-Technology Manufacturing Sites - 1976	31
5.3-2 Major High-Technology Manufacturing Centers	32
5.5-1 Comparative Occupational Structures, 1970	35
6.3-1 Office Employees in the Bay Area by Industry Division, 1970 and 1978	40
6.3-2 Office Employment As a Proportion of County Population and Employment	43
6.3-3 Location of Major Corporate Headquarters: 1965	45
6.3-4 Office Employment and Estimates of Local-Serving and Basic Segments, by County: 1978	46
6.3-5 Major Corporate Headquarters in the Bay Area	47
7.3-1 Estimates of Economic Impacts of Regional Tourist Expenditures in the San Francisco Bay Area, 1976-77, by County	51
7.4-1 Percentage Distributions of Tourist Expenditures by Visitor's Category, San Francisco (1977) and San Jose (1978-79)	53
8.2-1 Food Processing Demand Markets: 1974	57
8.3-1 Employment in Food Processing in the Bay Area and its SMSAs, selected years, 1960-1978	59

LIST OF TABLES (CONT.)

<u>Table</u>	<u>Page</u>
8.3-2 Bay Area Employment in Food Processing and in Food-Related Industry Groups in Wholesale and Retail Trade: 1972 and 1976	60
8.3-3 Bay Area SMSA Employment in Food Processing and in Food-Related Industry Groups, in Wholesale and Retail Trade: 1972 and 1976	61
8.5-1 Components of Value Added by Manufacture (VAM) in Food Processing in the Bay Area and its SMSA's: 1972 and 1976	64
9.3-1 Bay Area Employment in Long Distance Transportation, 1972-1977	68
9.3-2 Bay Area Air Freight	69
9.3-3 Total Tons of Waterborne Shipments	72
9.3-4 Total Tons of Waterborne Shipments (Excluding Petroleum)	74
9.3-5 Six Most Important Traded Commodities of the Bay Area, 1977	75
9.3-6 Shipments by Truck and Rail	76
9.4-1 Trading Partners, San Francisco-Oakland Customs District, Waterborne Liner and Tramp Vessel Shipments, 1978	78
10.3-1 Government Employment by SMSA: 1978	82
10.3-2 Government Employment by SMSA: 1960-1978 (Selected Years)	84
10.3-3 Bay Area Sector Employment by Levels of Government: 1960-1978, Selected Years	84
10.3-4 Public Sector Employment in Specified SMSAs by Selected Governmental Functions: June 1977	85
10.3-5 Basic Government Employment by SMSA: 1977	86

LIST OF TABLES (CONT.)

<u>Table</u>	<u>Page</u>
11.2-1 Population Levels, Labor Force Levels and Annual Rates of Growth; United States, California and the Bay Area: 1960, 1970, 1975	90
11.2-2 Estimated Proportions of the Labor Force in Specified Racial-Ethnic Groups for the Bay Area and SMSAs: 1978	94
11.2-3 Proportions of White-Collar and Blue-Collar Workers by Industry Divisions: 1970 and 1978	94
11.2-4 Manufacturing Employment	95
11.2-5 Services Employment	96
11.3-1 Unemployment Rates	97
11.3-2 Unemployment by Age, Race, and Sex, 1976, San Francisco-Oakland SMSA	98
11.3-3 Unemployment Rates by Occupational Group: San Francisco-Oakland, San Jose SMSAs and California: 1976	99
12.2-1 An Illustration of the Value Added Concept: Production and Sale of a Loaf of Bread	102
12.3-1 Key Variables in Manufacturing Industries; United States, California, and the Bay Area: 1976 and 1972	104
12.3-2 Performance Indicators for the Manufacturing Sector; United States, California, and the Bay Area: 1976 and 1972	105
12.4-1 Value Added Per Employee and Per Production Worker by Industry Group for the United States, California, and the Bay Area: 1972	106
12.4-2 Value Added Assuming Different Industry Mixes, 1972	108
12.5-1 Average Annual Payroll Costs Per Employee and Per Production Worker by Industry Group for the United States, California and the Bay Area: 1972	109

LIST OF TABLES (CONT.)

<u>Table</u>	<u>Page</u>
12.5-2 Labor Costs Assuming Different Industry Mixes: 1972	110
12.6-1 Comparisons of Bay Area and U.S. Output and Labor Costs, 1972	111
13.1-1 Land Development in the Bay Area 1965-1979	114
13.3-1 Industrial Land Development in the Bay Area, 1975	116
13.4-1 Housing Density and Potential in the Bay Area	117
13.4-2 Housing Location and Potential in the Bay Area	118
13.5-1 Employment and Employed Residents: 1965-1978	119
14.1-1 Correspondence of ABAG Modeling Groups to the Standard Industrial Classification	123-124
14.1-2 Total Employment in Major Employment Centers	125
14.1-3 Basic Employment in Major Employment Centers	127
14.2-1 Santa Rosa Economic Structure	130
14.3-1 Fairfield-Vacaville Economic Structure	135
14.4-1 Marin County Economic Structure	141
14.5-1 Richmond Economic Structure	146
14.6-1 Vallejo-Martinez Economic Structure	152
14.7-1 Pittsburg-Antioch Economic Structure	156
14.8-1 East Bay Economic Structure	162
14.9-1 Walnut Creek-Concord Economic Structure	169
14.10-1 San Francisco Economic Structure	174

LIST OF TABLES (CONT.)

<u>Table</u>		<u>Page</u>
14.11-1	Hayward-Fremont Economic Structure	180
14.12-1	Livermore Economic Structure	185
14.13-1	South San Francisco-San Francisco International Airport Economic Structure	190
14.14-1	San Mateo-Redwood City Economic Structure	195
14.15-1	Palo Alto-Mt. View-Sunnyvale Economic Structure	200
14.16-1	Santa Clara-San Jose Economic Structure	208

LIST OF FIGURES

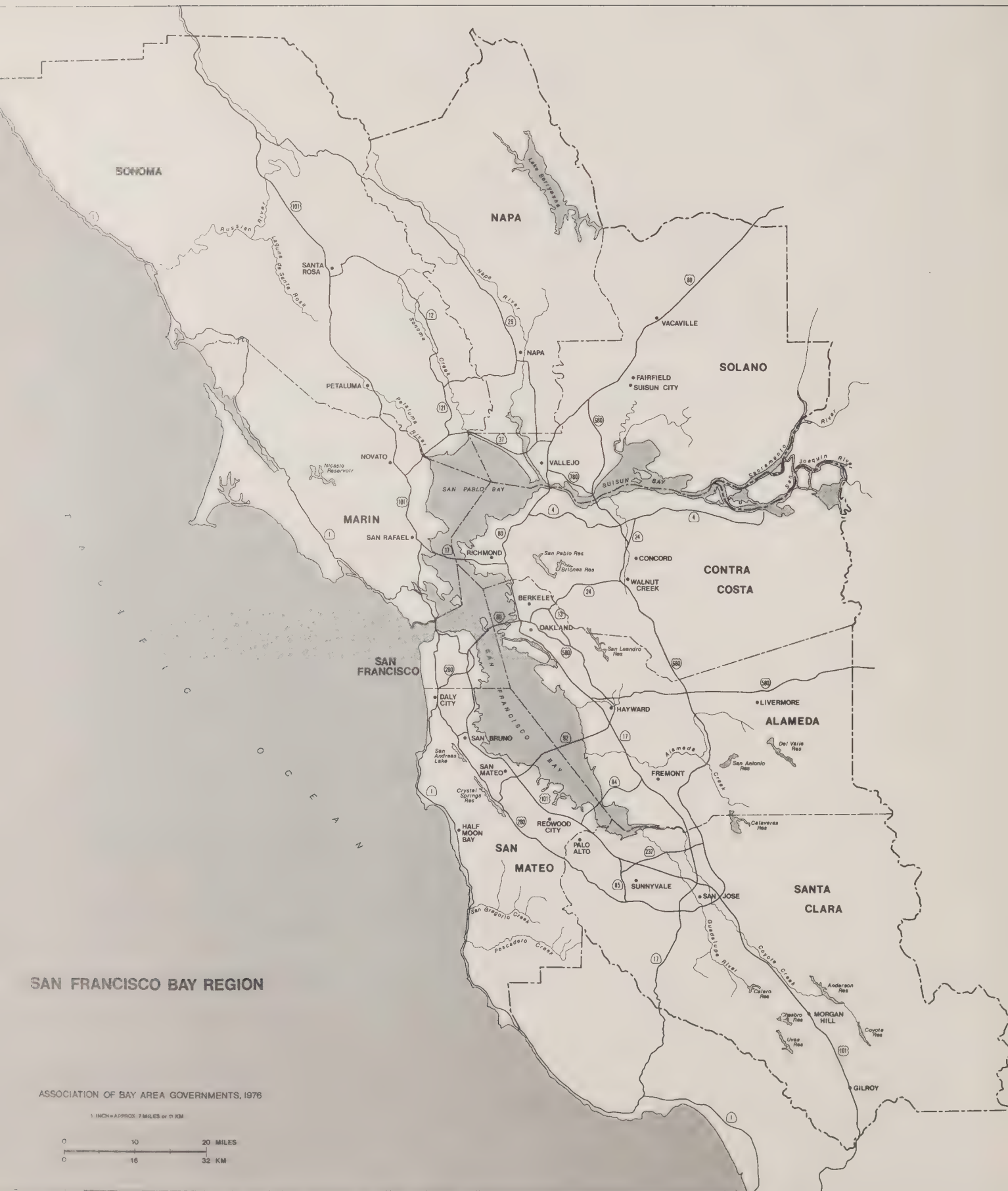
<u>Figure</u>	<u>Page</u>
3.3-A Bay Area Population Growth, Natural Increase Versus Net In-Migration: 1960 to 1975	10
3.3-B Bay Area Net In-Migration and Job Expansion	10
4.2-A 1972 Value Added in Manufacturing-San Francisco Bay Area	17
4.2-B 1972 Employment in Manufacturing-San Francisco Bay Area	18
4.2-C Proportion of Output Sold Outside the Region-1974, Bay Area Manufacturing Industries	20
5.3-A Comparative Structures of Manufacturing Employment; 1977	28
5.3-B Employment Trends in High-Technology Manufacturing	29
6.3-A Proportions of Office Employees in Bay Area Industry Divisions, 1978	41
6.3-B Office Employees in Bay Area Counties by Basic and Local-Serving Components, 1978	44
8.1-A The Economic Setting of the Food Industry	56
9.3-A Publicly Utilized Seaports in the Bay Area	71
11.2-A Composition of the Bay Area Population by Age and Sex: 1960, 1970, 1975	92
14.1-A Major Employment Centers	122
14.2-A Santa Rosa Employment Center	129
14.2-B Santa Rosa Employment Growth: 1965-1978	130
14.2-C Santa Rosa Commute Areas	132
14.3-A Fairfield-Vacaville Employment Center	134
14.3-B Fairfield-Vacaville Employment Growth: 1965-1978	135
14.3-C Fairfield Vacaville Commute Areas	137
14.4-A Marin County Employment Center	139

LIST OF FIGURES (CONT.)

<u>Figure</u>	<u>Page</u>
14.4-B Marin County Employment Growth: 1965-1978	141
14.4-C Marin County Commute Areas	142
14.5-A Richmond Employment Center	145
14.5-B Richmond Employment Growth: 1965-1978	146
14.5-C Richmond Commute Areas	148
14.6-A Vallejo-Martinez Employment Center	150
14.6-B Vallejo-Martinez Employment Growth: 1965-1978	152
14.6-C Vallejo-Martinez Commute Areas	153
14.7-A Pittsburg-Antioch Employment Center	155
14.7-B Pittsburg-Antioch Employment Growth: 1965-1978	156
14.7-C Pittsburg-Antioch Commute Areas	158
14.8-A East Bay Employment Center	160
14.8-B East Bay Employment Growth: 1965-1978	163
14.8-C East Bay Commute Areas	164
14.9-A Walnut Creek-Concord Employment Center	167
14.9-B Walnut Creek-Concord Employment Growth: 1965-1978	169
14.9-C Walnut Creek-Concord Commute Areas	170
14.10-A San Francisco Employment Center	173
14.10-B San Francisco Employment Growth: 1965-1978	175
14.10-C San Francisco Commute Areas	177
14.11-A Hayward-Fremont Employment Center	119
14.11-B Hayward-Fremont Employment Growth: 1965-1978	180
14.11-C Hayward-Fremont Commute Areas	182

LIST OF FIGURES (CONT.)

<u>Figure</u>	<u>Page</u>
14.12-A Livermore Employment Center	184
14.12-B Livermore Employment Growth: 1965-1978	185
14.12-C Livermore Commute Areas	187
14.13-A South San Francisco-San Francisco Airport Employment Center	189
14.13-B South San Francisco-San Francisco International Airport Employment Growth: 1965-1978	190
14.13-C South San Francisco-San Francisco Airport Commute Areas	192
14.14-A San Mateo-Redwood City Employment Center	194
14.14-B San Mateo-Redwood City Employment Growth: 1965-1978	195
14.14-C San Mateo-Redwood City Commute Areas	197
14.15-A Palo Alto-Mt. View-Sunnyvale Employment Center	199
14.15-B Palo Alto-Mt. View-Sunnyvale Employment Growth: 1965-1978	201
14.15-C Palo Alto-Mt. View-Sunnyvale Commute Areas	203
14.16-A Santa Clara-San Jose Employment Center	206
14.16-B Santa Clara-San Jose Employment Growth: 1965-1978	209
14.16-C Santa Clara-San Jose Commute Areas	210



SAN FRANCISCO BAY REGION

ASSOCIATION OF BAY AREA GOVERNMENTS, 1976

1 INCH = APPROX. 7 MILES or 11 KM

0 10 20 MILES
0 16 32 KM

PREFACE

The Bay Area Economic Profile, a report jointly developed by the Association of Bay Area Governments and the Bay Area Council, is a description of the economic status of the Bay Area. The Bay Area consists of the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

The Profile is intended to be a first step toward three longer-range objectives:

- Creating a better understanding of the relationships between the economy of the Bay Area and public policy decisions.
- Building consensus between the public and private sectors on regional economic problems and opportunities.
- Formulating economic goals, objectives, and policies for the future of the Bay Area.

By providing the framework for a better understanding of the structure and functioning of the Bay Area economy, the Economic Profile will aid in achieving consensus on regional economic goals, and on public policy actions consistent with those goals.

CHAPTER 1

INTRODUCTION

The Bay Area is a large, diversified metropolitan region. In 1979, its 7,000 square miles accommodated a population of just over five million, an increase of nearly one and a half million in the last 20 years. The region ranks fifth in size among all United States metropolitan areas. Its economy provides nearly two and a half million jobs, more than most states. In providing a profile of the past two decades and the current status of the Bay Area economy, this report examines in detail numerous important characteristics of the region's economic activities, labor force, and other economic resources, as well as their geographic distribution.

The focus of this profile is first to examine the Bay Area's economic base and then to identify the economic activities which have significantly influenced regional economic growth and those that are likely to be significant in the future. The selected economic activities will then be treated in some detail. In addition, important economic resources influencing the health of the regional economy will be described.

The expansion of the Bay Area's economic base has been characterized by a relative shift away from goods-producing activities toward service-oriented activities. This is a nationwide trend which has been characterized as the post-industrial state of economic development. Some economic activities that have been evolving in importance over the past twenty years, for example, the office industry and tourism, are difficult to depict using discrete Standard Industrial Classification (SIC) codes. However, an understanding of their uniqueness is important for explaining changes in the regional economy.

The major findings of this report are presented in Chapter 2, followed by an overview of the economy in Chapter 3. This overview presents information on population and employment growth trends for the Bay Area in comparison with California, the United States, and other metropolitan areas.

The Bay Area's economic base is described in Chapter 4, with emphasis on six selected groupings of economic activities which were determined to have significantly influenced regional economic growth. Several economic indicators are used in this determination, such as employment and employment change, value added to the regional economy, and exports. In Chapters 5 through 10, the six groupings of economic activities--high-technology manufacturing, the office industry, tourism, food processing, long-distance transportation, and the public sector--are examined in more detail.

Characteristics of the region's labor force and recent changes in its composition are described in Chapter 11, and productivity in manufacturing is discussed in Chapter 12. In Chapter 13, the supply of residential and industrial land is described in terms of developed and vacant developable land, and regional trends in the growth and distribution of jobs and housing are presented.

The final chapter of the profile, Chapter 14, describes 15 major employment centers in the region, and highlights the geographic diversity and changing nature of the regional economy at a subregional level. The centers are presented in terms of their present industrial structure, significant changes in their structure from 1965 to 1978, locational characteristics, commuting patterns of employed residents, and selected housing indicators.

CHAPTER 2

FINDINGS

2.1 GROWTH OF THE REGION

1. From 1960 to 1976, population grew faster in the Bay Area than in any other consolidated metropolitan area outside the "Sunbelt" and today, with approximately five million people, the Bay Area is the fifth largest metropolitan area in the nation.
2. Most population growth over the past two decades has occurred in the suburban areas of the region.
3. The number of households in the region has grown at a faster rate than population. Over the past two decades, the Bay Area's annual household growth rate has been 2.9 percent, significantly higher than the 1.8 percent annual growth rate of population.
4. The Bay Area employment growth rate between 1960 and 1978 was substantially higher than in the nation. Bay Area employment grew by about one million jobs, or at an annual growth rate of 3.3 percent compared with 2.1 percent for the nation.

2.2 THE ECONOMIC BASE

1. The Bay Area has a growing and highly diversified economic base, with particular strength in economic sectors that are emerging nationally.
2. Generally, the Bay Area economy has shifted from goods-producing to service-oriented activities to a greater degree than has occurred nationwide.
3. Of the important sectors of the region's economic base, the most rapidly growing are:

High-Technology Manufacturing, including aerospace, computers, electronics, and instruments.

- The Bay Area is a worldwide center for high-technology manufacturing and new product development. The regional employment in this sector was about 160,000 in 1978.
- One-fifth of all new jobs created in this sector nationwide between 1972 and 1977 were in the Bay Area -- some 50,000 jobs.

- These industries rank high in employment, value added in production, and the proportion of output reaching export markets.
- Bay Area employment in this sector grew 8 percent annually between 1972 and 1977, compared with a 1.7 percent national annual rate.
- In 1975, 79 percent of high-technology manufacturing employment was concentrated in the Santa Clara Valley; this concentration is likely to continue.
- A recent survey by the Santa Clara County Manufacturing Group indicates Bay Area employment in this sector could increase by as many as 25,000 jobs over the next two years, and by another 30,000 between 1982 and 1985.

Office Industry, characterized by concentrations of professional, technical, clerical, and sales workers in office buildings.

- This sector accounted for almost 60 percent of the region's total employment growth between 1970 and 1978 -- almost 300,000 new jobs and by 1978, slightly over half of all Bay Area jobs were in the office sector.
- Of the more than 1.1 million Bay Area office workers in 1978, about a third were employed in basic activities such as corporate headquarters, auxiliary operations, and western regional offices, all serving areas larger than the Bay Area.
- Downtown San Francisco's ability to accommodate increased concentrations of office workers is currently being questioned and it is unclear where future growth will take place.
- The Bay Area has become an important center for corporate headquarters -- 43 of Fortune magazine's list of major corporations (1000 industrial and 300 non-industrial) are headquartered here.

Tourism, including activities that serve conventioners, business travelers, and vacationers.

- Indications are that tourism in the region has grown rapidly, and has influenced growth in hotels and motels, restaurants, entertainment and recreation, retail trade, and other activities.

- While data on tourism-related jobs is generally not available, one of the best indicators of activity is the number of visitors to San Francisco, which increased from 1.56 million in 1970 to 3.21 million in 1978.
- New developments aimed at tourism indicate it will be an increasingly important economic sector. However, energy shortages could slow the growth of tourism in the Bay Area.

4. Other important sectors of the region's economic base are:

Food Processing, encompassing a wide range of manufacturing activities involved with the processing of food and beverages.

- Historically one of the Bay Area's most important manufacturing activities, the food processing industry, sold almost \$5 billion worth of products in 1976, \$1.6 billion of which was value added.
- This sector is diverse, encompassing a variety of products and locations throughout the Bay Area.
- Regional employment has remained fairly stable at about 49,000 through the 1970s, but represents a somewhat declining share of total employment.
- Food processing is the focal point of a broad range of related supply, production, distribution, and consumer activities.

Long-Distance Transportation, including rail, truck, air and water modes.

- Besides being important as an employment sector, long-distance transportation facilities provide services essential to nearly all other economic complexes.
- International shipping tonnage expanded by more than 75 percent between 1972 and 1977.
- The Orient now accounts for 74 percent of our international trade; the potential for further significant increases in trade with the Orient points to the growing importance of shipping.

Government, federal and state, excluding military personnel.

- San Francisco is the most important western center for federal activities.
- Regional employment was relatively stable between 1972 and 1978, at about 165,000.
- A significant decrease over the 1972-1978 period in federal defense-related employment, from 45,000 to 35,000, has been partially offset by employment increases in other federal activities, from 52,500 to 56,500.
- Within state government over this same period, higher education increased in employment from 39,300 to 46,300 and other state functions increased from 26,200 to 29,000.

2.3 ECONOMIC RESOURCES

1. The Bay Area labor force is growing faster than its population, due to the "baby boom" population of the 1950s entering the high work-participation years and the rapidly increasing participation of women in the labor force.
2. White-collar occupations are growing in importance, with 62 percent of Bay Area workers classified as white-collar in 1978, compared with 53 percent in 1960.
3. The productivity of Bay Area manufacturing is high, relative to California and the United States.
4. Structural unemployment remains a major problem, while some jobs go unfilled. Both high-technology manufacturing and the office industry are requiring increasing numbers of skilled workers.
5. In broad terms, the supply of industrial land appears adequate. However, some industries may still have difficulty finding appropriate sites in the Bay Area, particularly those requiring locations with special requirements, or having difficulty meeting air and water quality regulations.
6. Proposition 13 (June 1978) and Proposition 4 (November 1979) have increased uncertainty about local governments' ability to provide public services needed to support development.
7. There appears to be an increasing job-housing imbalance, as housing is built at lower densities and located farther from work-sites.

CHAPTER 3

AN OVERVIEW OF THE BAY AREA ECONOMY

3.1 POPULATION GROWTH

From 1960 to 1976, population grew faster in the Bay Area than in any consolidated metropolitan area outside the "Sunbelt." This growth has slowed somewhat since the period of especially rapid expansion in the late 1960s, but the growth rate is still higher than most consolidated areas (two or more adjacent and closely related metropolitan areas). Between 1960 and 1976, the region's yearly population growth rate averaged 1.8 percent, and was exceeded by only three other areas in the nation--Los Angeles-Long Beach-Anaheim (1.9 percent), Miami-Fort Lauderdale (2.5 percent), and Houston-Galveston (3.2 percent). In the more recent years between 1970 and 1976, the Bay Area was the third fastest growing consolidated area in the nation, with an annual growth rate of 0.9 percent. The only areas growing faster were Houston-Galveston (2.9 percent) and Miami-Fort Lauderdale (3.5 percent).

Table 3.1-1

Population Growth By Standard
Consolidated Statistical Areas: 1960-1976

Standard Consolidated Statistical Area	1976 Rank	Population (millions)		Growth 1960-1976	Annual Percentage Growth Rate
New York-Newark- Jersey City	1	15.12	17.10	1.98	.8
Los Angeles-Long Beach-Anaheim	2	7.75	10.47	2.72	1.9
Chicago-Gary	3	6.79	7.65	.86	.7
Philadelphia- Wilmington-Trenton	4	5.02	5.66	.64	.8
BAY AREA*	5	3.68	4.90	1.22	1.8
Detroit-Ann Arbor	6	4.12	4.64	.52	.7
Boston-Lawrence Lowell	7	3.46	3.91	.45	.8
Cleveland-Akron- Lorain	8	2.73	2.89	.16	.4
Houston-Galveston	9	1.57	2.58	1.01	3.2
Miami-Ft. Lauderdale	10	1.57	2.32	.75	2.5
Seattle-Tacoma	11	1.43	1.84	.41	1.6
Cincinnati-Hamilton	12	1.47	1.61	.14	.6
Milwaukee-Racine	13	1.42	1.58	.16	.7

* The Bay Area includes the San Francisco-Oakland-San Jose Standard Consolidated Statistical Area plus the County of Sonoma.

Sources: U.S. Department of Commerce, Bureau of the Census, City and County Data Book, 1977, Washington, 1978.

Estimates of the Population of Counties and Metropolitan Areas: July 1, 1975 and 1976, Series P-25, No. 739
Washington, November 1978.

Today, with approximately five million people, the Bay Area is the fifth largest metropolitan area in the nation. A major factor in the region's population increase has been a high level of in-migration, which has been closely correlated with employment growth.

3.2 EMPLOYMENT GROWTH

Employment growth between 1960 and 1978 was significantly higher than the national average. During that period, Bay Area wage and salary employment grew by one million jobs, to a total of nearly two and a half million. This increase translates to an annual growth rate of 3.3 percent, compared with 2.1 percent for the nation as a whole, and is an important indicator of economic expansion.

Table 3.2-1

Overall Employment Growth, 1960-1978
Bay Area, California and United States
(millions of wage and salary employees)

	1960	1978	Growth 1960-1978	Annual Percentage Growth Rate
Bay Area	1.3	2.3	1.0	3.3
California	5.2	9.5	4.3	3.4
United States	61.3	89.9	28.6	2.1

Sources: California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, various issues.

U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.

3.3 IN-MIGRATION

During the periods 1960 to 1965 and 1965 to 1970, net in-migration accounted for 59 percent and 49 percent of population growth, respectively. Thus in the 1960s when the region's unemployment growth was most rapid, in-migration rates were also at an all-time high. Both in-migration and job expansion slowed during the recession years in the early 1970s. From 1970 to 1975, net in-migration accounted for 32

percent of the population growth. More recently, however, job growth has again begun to accelerate, and net in-migration has increased accordingly. Although not all in-migration is due to job expansion, these trends indicate a strong correlation.

3.4 TRENDS IN THE BAY AREA'S ECONOMIC STRUCTURE

Generally, the Bay Area's economic base has shifted from goods-producing to service-oriented activities to a greater degree than has occurred nationally. As the region has grown, the nature of its economy has changed, to some extent paralleling national trends, but also reflecting the Bay Area's advantages in particular economic sectors. The goods-producing activities (agriculture, construction, and manufacturing) have become relatively less important components of the economy, while service-oriented activities (trade, finance, government, business, professional, and other services) have grown in importance. The share of Bay Area employment in service-oriented activities expanded from 52 percent in 1960 to 64 percent in 1978. In contrast, service-oriented activities accounted for 56 percent of U.S. employment in 1978.

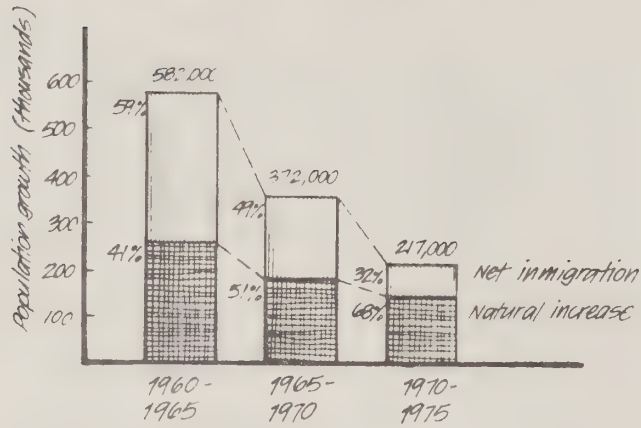
Several interesting trends in relative shares of employment in ten major industry divisions for the Bay Area, California, and the United States from 1960 to 1975 can be observed in Table 3.4-1. In 1960, manufacturing accounted for the largest share of employment in the Bay Area followed by government and retail trade. By 1975, government had become the largest division followed by services, with manufacturing declining to third. Similar trends are evident in the California economy, while at the national level, manufacturing declined in relative terms, but retained the largest share of employment, with government second. This reflects the faster emergence of post-industrial economy traits in California and the Bay Area, together with the historical concentration of certain manufacturing activities in the east.

Transportation, communication and utilities are significantly more important in the bay Area than in either California or the United States as a whole. This indicates the strength of this region as an international trading center, and as a headquarters center for railroads, airlines, and telephone, gas, and electric utilities.

Another important Bay Area industry sector is finance, insurance, and real estate. This industry has nearly 7 percent of Bay Area employment, contrasted with less than 6 percent of employment for the state and the nation. The concentration of bank holding company and insurance carrier headquarters, the Pacific Coast Stock Exchange, the Federal Reserve Bank, and the Federal Home Loan Bank all contribute to the importance of the Bay Area as a financial center.

Figure 3.3-A

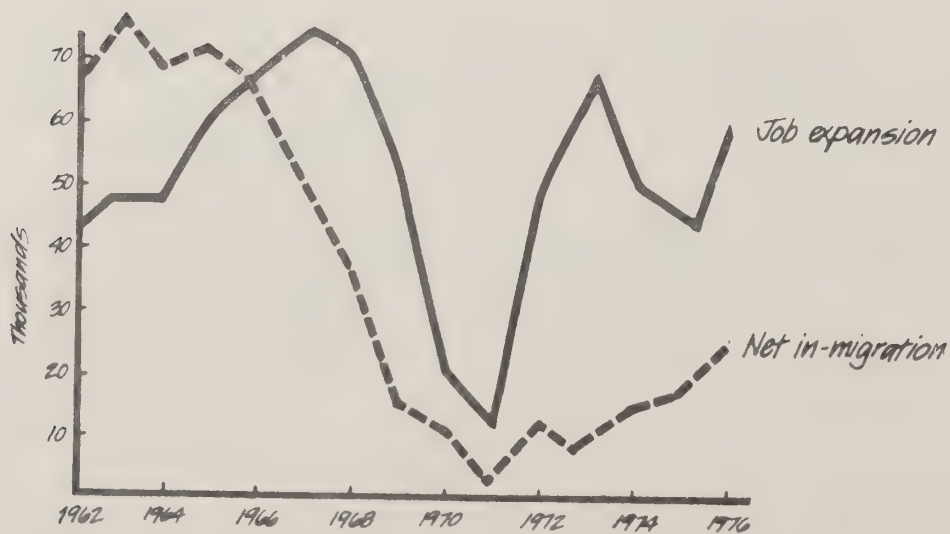
Bay Area population growth, natural increase versus net in-migration: 1960 to 1975



Source: California Department of Finance

Figure 3.3-B

Bay Area net in-migration and job expansion (3 year moving averages)



Source: California Employment Development Department, Wage and Salary Employment by Industry. California Department of Finance, Population Research Unit.

Table 3.4-1
Comparative Employment Shares,
Bay Area, California, and United States: 1960-1975

INDUSTRY DIVISION	SHARE OF EMPLOYMENT (PERCENT)					
	BAY AREA		CALIFORNIA		UNITED STATES	
	1960	1975	1960	1975	1960	1975
1. Agriculture, Forestry, Fishing	2.7	1.1	6.4	3.4	11.5	5.3
2. Mining	0.2	0.1	0.6	0.4	1.2	0.9
3. Contract Construction	6.2	4.3	5.5	3.7	4.7	4.0
4. Manufacturing	21.9	18.2	25.2	19.6	27.4	22.4
5. Transportation, Communications, Utilities	9.3	7.6	6.8	5.7	6.5	5.4
6. Wholesale Trade	6.3	5.6	5.6	5.8	4.9	5.1
7. Retail Trade	14.3	15.3	14.8	16.3	13.7	16.3
8. Finance, Insurance, Real Estate	6.1	6.9	4.8	5.5	4.4	5.1
9. Services	14.1	19.8	13.6	19.0	12.1	17.1
10. Government	18.9	21.1	16.7	20.6	13.6	18.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Sources: California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, various issues.

U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.

3.5 REFERENCES

- (1) California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, various issues.
- (2) U.S. Department of Commerce, Bureau of the Census, City and County Data Book, Washington, 1978.
- (3) _____, Estimates of the Population of Counties and Metropolitan Areas: July 1, 1975 and 1976, Series P -25, No. 739, Washington, November 1978.
- (4) U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.

CHAPTER 4

THE ECONOMIC BASE

4.1 INTRODUCTION

In order to understand how the structure of the economy has changed, and what forces have influenced its evolution, it is useful to describe the region in terms of its economic base.

Under the economic base concept, economic activities are loosely divided into two categories:

Basic activities, which respond to demand from outside the region, and bring income to the Bay Area through the export of goods and services. It is growth in basic activities that stimulates overall expansion of the economy.

Local-serving activities are those responding to demand from within the region. These activities expand in response to increases in population and income levels.

The distinction between basic and local serving activities is not always clear-cut and sometimes involves qualitative judgments, but general findings about the Bay Area's economic base help provide an understanding of the dynamics of our region's economy.

The Bay Area has a growing and highly diverse economic base, and economic base growth is the driving force behind the region's overall economic expansion. The economic diversity of the Bay Area is important because it means the region's economy will be relatively less affected by cyclical fluctuations in the national economy or downturns in any given industry.

Components of the region's economic base have been defined in terms of economic sectors, or groupings of highly interrelated industries. Key sectors of the Bay Area's economic base have been identified based on importance in one or more of the following indicators: their current employment levels, recent employment growth, the value added of their products (total sales minus costs of materials), the volume of sales made outside the region, and the degree to which they interact with or serve other industries.

The Bay Area's economic base is comprised of a broad range of economic sectors. The most important and most rapidly growing are:

- o High-technology manufacturing, including aerospace, computers, electronics and instruments.
- o The office industry, characterized by concentrations of professional, managerial, clerical, and sales workers in office buildings. (It does not include office workers in hospitals and schools.)

- o Tourism, defined according to the market served - conventioners, business travelers, and vacationers. Major activities include hotels, motels, retail trade and local transportation.

Other key sectors are:

- o Food processing, including fruits, vegetables, wine, and brandy for export markets, as well as a number of products for regional markets, such as meat, dairy, and bakery products.
- o Long-distance transportation, including air, rail, highway, and sea cargo activities.
- o The public sector, including federal offices serving the western United States, offices and universities and large government enterprises such as the Mare Island Naval Shipyard. (Military personnel are not included.)

4.2 THE REGION'S INDUSTRIES

The region's economic base sectors were identified through a detailed examination of the region's industries using several criteria, including employment, value added by manufacture, and the proportion of output which is exported. The industries are listed in Table 4.2-1, together with 1972 and 1978 employment levels and growth.

4.2.1 Agriculture, Forestry, Fishing

Historically, agricultural activities in the Bay Area have been substantial, growing a wide range of produce. Many agricultural activities, notably the cultivation of wine grapes, specialty vegetable crops, and horticultural commodities lend unique character to the Bay Area and its economy. In 1975, approximately 170,000 acres or 6 percent of the region's land area were under cultivation, not including the much larger acreages used for livestock production.

Major cultivated crops include fruits, grapes, horticultural products, and a wide range of vegetables. These agricultural products supply other industries in the region, such as winemaking and fruit and vegetable canning. They also contribute to the region's economic base through exports though exports declined from 42 percent of the 1967 total output of \$420 million to only 23 percent of the 1974 \$630 million total output (5). Over the period 1972-78, agricultural production employment increased only slightly from 22,500 to 24,900. Because of these moderate employment levels and declining exports in agriculture, and because forestry and fishing are also not significant in the Bay Area, these sectors will not be included in further examination of the region's economic base.

TABLE 4.2-1

REGIONAL EMPLOYMENT: 1972-1978

(thousands)

INDUSTRY DIVISIONS	EMPLOYMENT		EMPL. GROWTH 1972 - 1978	PERCENT SHARE OF REGIONAL GROWTH
	1972	1978		
A. AGRICULTURE, FORESTRY, FISHING	22.5	24.9	2.4	.5
A.1 Agricultural Production (01)	20.5	22.4	1.9	.4
A.2 Other Agricultural (07,08,09)	2.0	2.5	0.5	.1
B. MINING	2.0	2.7	0.7	.1
C. CONSTRUCTION	86.7	100.9	14.2	3.0
C.1 General (15)	27.0	30.0	3.0	.6
C.2 Heavy (16)	19.4	20.9	1.5	.3
C.3 Special (17)	40.3	50.0	9.7	2.1
D. MANUFACTURING	325.6	419.1	93.5	20.0
D. 1 Food Processing (20)	48.3	49.2	0.9	.2
D. 2 Textiles (22)	1.0	0.7	- 0.3	- .1
D. 3 Apparel (23)	11.5	14.8	3.3	.7
D. 4 Lumber (24)	5.4	5.1	- 0.3	- .1
D. 5 Furniture (25)	4.2	5.3	0.9	.2
D. 6 Paper (26)	10.1	9.0	- 1.1	- .2
D. 7 Printing (27)	24.1	26.5	2.4	.5
D. 8 Chemicals (28)	14.7	18.3	3.6	.7
D. 9 Petroleum (29)	10.1	10.0	- 0.1	--
D.10 Rubber (30)	4.7	6.2	1.5	.3
D.11 Leather (31)	0.8	1.2	0.4	.1
D.12 Stone (32)	9.8	10.6	0.8	.2
D.13 Primary Metals (33)	13.6	15.1	1.5	.3
D.14 Fabricated Metals (34)	24.1	24.3	0.2	--
D.15 Machinery, Except Electrical (35)	37.1	61.0	23.9	5.1
D.16 Electrical Machinery (36)	52.0	87.5	35.5	7.6
D.17 Transportation Equipment (37)	35.7	41.4	5.4	1.1
D.18 Instruments (38)	15.1	26.3	11.2	2.4
D.19 Miscellaneous Manufacturing (39)	3.3	6.9	3.6	.7
E. TRANSPORTATION, COMMUNICATION, UTILITIES	149.5	152.9	3.4	.7
E. 1 Long Distance Transportation (40, 42-46)	79.0	80.0	1.0	.2
E. 2 Local Transportation, Communica- tion, Utilities (41, 47-49)	70.5	72.9	2.4	.5
F. WHOLESALE TRADE (50, 51)	102.4	129.6	27.2	5.8
G. RETAIL TRADE (52-59)	273.6	366.7	93.1	19.9
H. FINANCE AND INSURANCE	122.4	163.4	41.0	8.8
H. 1 Basic Finance and Insurance (60 part, 62, 63, 67)	55.6	74.0	18.4	3.9
H. 2 Local Finance and Insurance (60 part, 61, 64, 65, 66)	66.8	89.4	22.6	4.8
I. SERVICES	341.1	480.8	139.7	29.8
I. 1 Basic Services (73, 82 part, 84, 86, 89)	116.5	168.7	52.2	11.1
I. 2 Retail Services (70, 72, 75, 76, 78, 79, 86)	114.2	140.5	26.3	5.6
I. 3 Professional Services (80, 81, 82 part, 83)	110.4	171.6	61.2	13.1
J. GOVERNMENT	381.8	434.7	52.9	11.3
J. 1 Federal Government (91)	97.5	90.6	- 6.9	- 1.5
J. 2 State, Local Government (92, 93)	284.3	344.1	57.8	12.8
ALL INDUSTRIES	1807.6	2275.6	468.0	100.0

Source: California Employment Development Department,
Annual Planning Information.

4.2.2 Mining

Mining is the region's smallest industry division, employing only 2,800 workers in 1978. This employment level is virtually stable over time and consists for the most part of rock, sand, and gravel extraction serving the construction industry. In addition, approximately 500 employees serve the San Francisco headquarters of petroleum extraction companies. Because of its very small employment levels and its predominantly local-serving nature, mining does not constitute an important component of the region's economic base, and will not be considered further.

4.2.3 Construction

In terms of employment, the Bay Area's construction industry is very large. The 1978 annual average level of construction employment in the region was over 100,000. Thirty percent of these employees were engaged in construction of buildings, 20 percent in other structures, and the remaining 50 percent were engaged in special trades.

Over the period 1967-74, the value of construction output in current dollars increased from \$3 billion to \$4.9 billion (5). During each of these years, residential construction accounted for only about 20 percent of output, indicating that the construction industry has substantial interactions with other industries in the region. Reliable estimates of exports by the construction industry are not currently available, but there are several construction companies in the region which do substantial amounts of business all over the world.

Although construction shows fluctuating employment levels with very little or no growth, it is major employer and is quite important in terms of its interactions with other parts of the economy. It is, however, primarily local-serving and is not considered to be an important part of the economic base.

4.2.4 Manufacturing

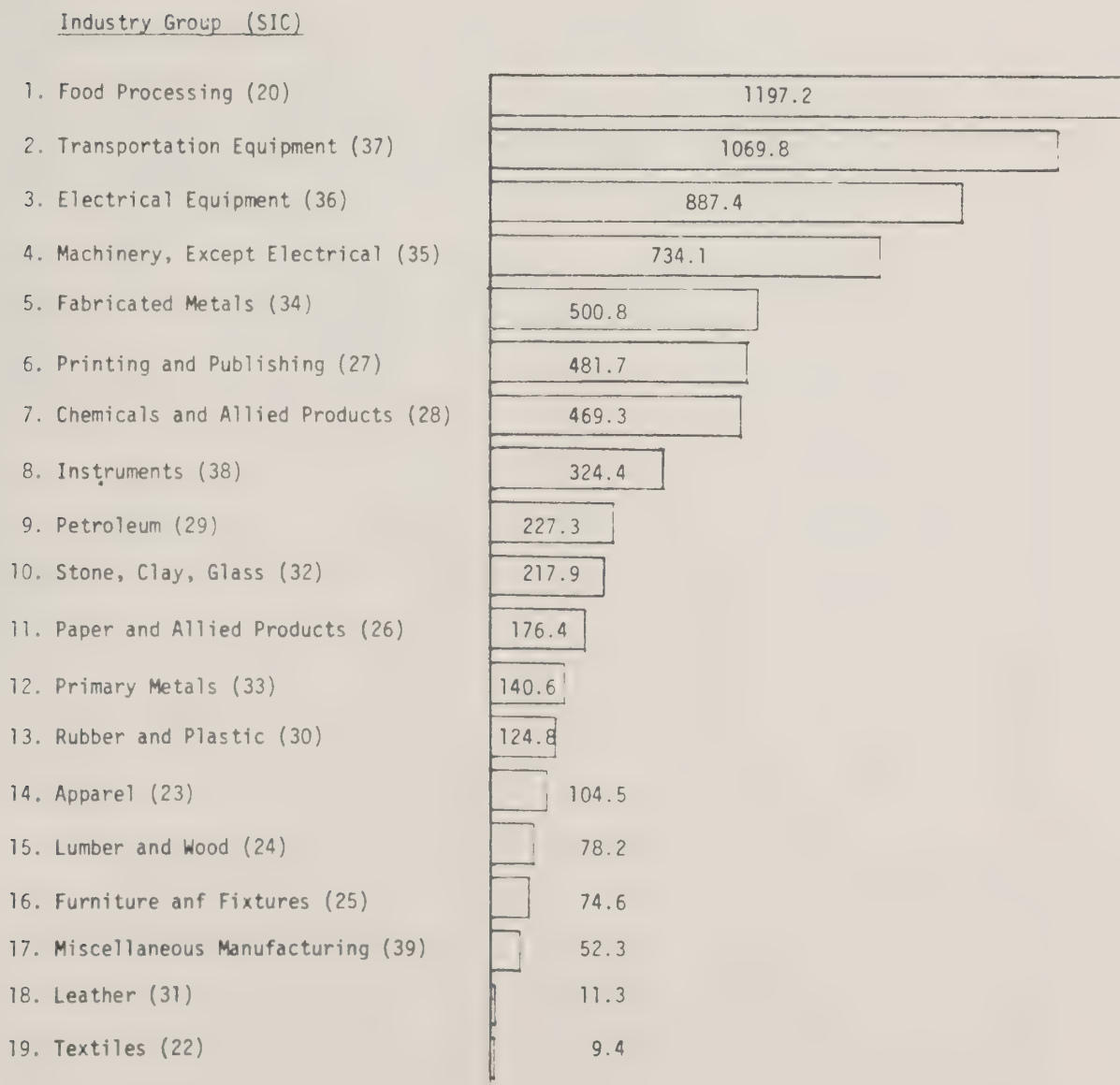
Manufacturing includes 19 major industry groups, with almost 420,000 employees in 1978. The relative importance of these 19 industry groups to the region's economic base can be assessed on the basis of value added, employment, and proportion of output which is exported.

Consistent data on value added and employment are available from the 1972 Census of Manufactures, and are shown in Figures 4.2-A and 4.2-B.

Food processing had the largest component of value added of any manufacturing industry--nearly \$1.2 billion of the \$7 billion sector total, or about 17 percent. Transportation equipment was second, followed by electrical machinery, and machinery, except electrical. These four classifications accounted for over 55 percent of value added. A second group of manufacturing industries, including fabricated metals, printing and publishing, chemicals, instruments, and petroleum together accounted for another 28 percent of value added. The remaining 10 manufacturing industries provided only 17 percent of regional value added in manufacturing.

FIGURE 4.2-A

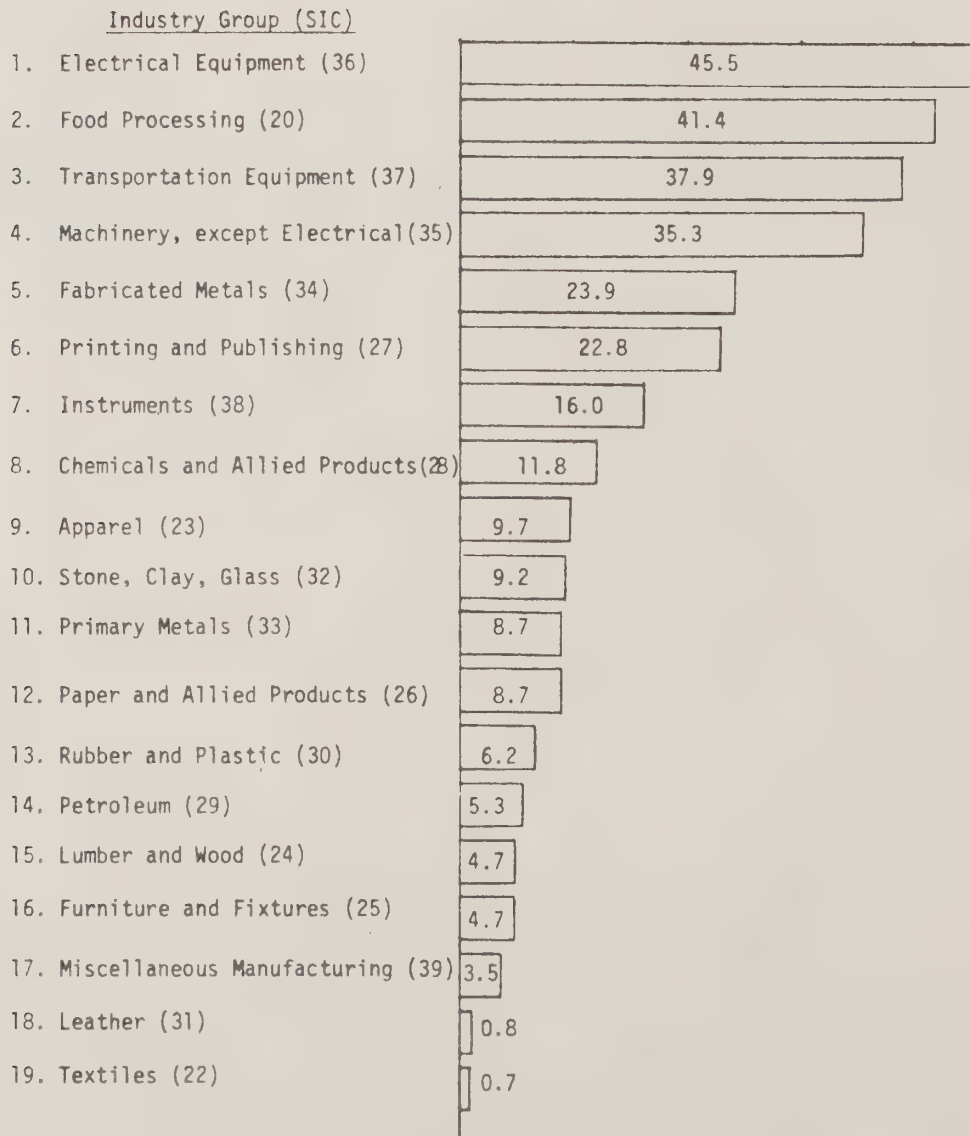
1972 VALUE ADDED IN MANUFACTURING - SAN FRANCISCO BAY AREA
(millions of current dollars)



Source: U.S. Department of Commerce, Bureau of the Census
1972 Census of Manufactures.

FIGURE 4.2-B

1972 EMPLOYMENT IN MANUFACTURING - SAN FRANCISCO BAY AREA



Source: U.S. Department of Commerce, Bureau of the Census,
1972 Census of Manufactures.

The ranking of manufacturing industries by employment shows a pattern very similar to value added, with some minor variations. Electrical machinery was the largest employer followed by food processing, transportation equipment, and machinery, except electrical. These four classifications together accounted for 48 percent of total manufacturing employment, with the next five industries accounting for 25 percent and the bottom 10 industries accounting for 27 percent.

Figure 4.2-C shows the proportions of manufacturing industry output sold outside the region. Several industries: machinery, except electrical, transportation equipment, instruments, primary metals, and electrical machinery have proportions above 60 percent. These industries produce highly sophisticated and specialized products, such as computers, electronic guided components, missiles, and scientific instruments.

A second group of industries, including food processing, petroleum, chemicals, paper, lumber and wood, and fabricated metals tend to export from 30 to 50 percent of their output. Markets for these products are balanced, then, between exports, sales to other regional industries, and sales to regional consumers.

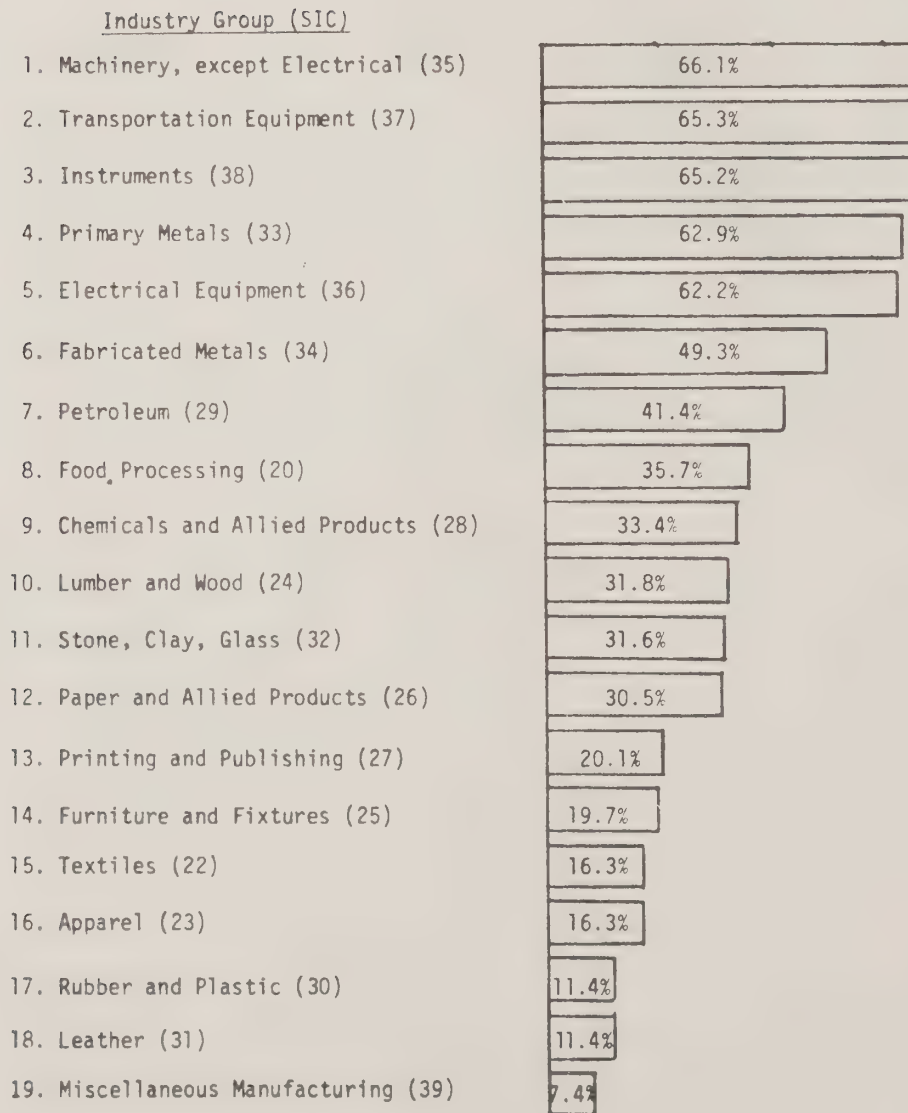
Finally, there is a group of industries which exports 20 percent of outputs or less and mainly serves regional markets. This group includes apparel and textiles, printing and publishing, furniture, leather, and miscellaneous manufacturing. These are usually simple, small-scale production facilities, easily established in all areas and thus tending to serve local markets.

This brief survey of the manufacturing industry groups indicates that in terms of the economic base, the important sectors are food processing and high-technology. Another relatively important group of manufacturing activities is the production of primary and semi-finished products such as chemicals, petroleum, primary metals, fabricated metals, paper and allied products, and stone, clay, glass, and concrete products. Of least importance are those small-scale manufacturers which generate little employment or value added, and sell primarily to customers within the region. These include apparel and textiles, furniture, printing and publishing, rubber, plastic, leather, and miscellaneous manufacturing.

4.2.5 Transportation, Communication, Utilities

Historically, more than half of the employment in this division has been in long-distance transportation (railroad, truck, air, and water). The importance of long distance transportation to the economic base is indicated by increasing volumes of international trade, increasing shipments of Bay Area manufactured goods, ongoing modernization and expansion of airport, seaport, rail, and truck shipment facilities, and the major interactions between long-distance transportation and other regional industries.

FIGURE 4.2-C
PROPORTION OF OUTPUT SOLD OUTSIDE THE REGION -- 1974
BAY AREA MANUFACTURING INDUSTRIES



Source: University of California Cooperative Extension,
Bay Area Input-Output Model, 1967 and 1974.

Although transportation employment has not grown substantially, gains in tonnage shipped have been substantial. The Census of Transportation reports that tonnages of goods shipped by Bay Area manufacturers increased from 26,700 in 1967 to 32,200 in 1972, at an annual growth rate of 3.8 percent (4). Another indicator of the importance of long-distance transportation is the volume of international trade. Measured in current dollars, imports and exports passing through the San Francisco Customs District increased from \$3.2 billion in 1970 to \$9.5 billion in 1976 (2).

The local transportation, communication, and utilities sector primarily serves regional markets, with numerous interactions with other Bay Area industries. There is also an extensive public transit service. Some communication and utilities headquarters in the Bay Area serve adjacent parts of the state; but overall, the local transportation, communication, and utilities sector is not an important part of the economic base.

4.2.6 Wholesale Trade

Wholesale trade is a somewhat important Bay Area industry. 1978 employment stood at over 129,000, an increase of nearly 30,000 since 1972. Over 75 percent of wholesale trade employment is located in central Bay Area counties, reflecting the interaction of trade with long distance transportation facilities concentrated in this part of the region.

Wholesale trading in machinery, electrical equipment, grocery products, and beverages accounts for about 50 percent of total wholesale trade employment, reflecting the importance of these manufacturing industries in the Bay Area.

In summary, wholesale trade does not represent a unique or important component of the economic base.

4.2.7 Retail Trade

Retail trade is primarily local-serving in nature. The numerous food stores, automobile dealers, department stores, shops, and eating and drinking places primarily exist to serve the local population. However, many retail establishments in certain parts of the region, notably San Francisco, also cater to tourists and conventioners. The magnitude of tourism related employment and value added is difficult to estimate, but some attention will be paid in this report to tourist-oriented retailing in conjunction with other tourist activities--hotels, motels, and recreation services--as a potentially important and growing component of the Bay Area economic base.

4.2.8 Finance, Insurance, and Real Estate

The basic finance and insurance sector, including large banks, holding companies, and insurance carriers, is a major source of employment growth, accounting for an increase of nearly 20,000 jobs over the period 1972-1978. The 1978 basic finance and insurance employment level was approximately 74,000. This sector is also one of the driving forces behind intensive office development in San Francisco and other parts of the region. Given these considerations, the basic finance and insurance sector constitutes an important part of the economic base.

4.2.9 Services

The basic services sector is important because of its numerous interactions with other businesses, providing direct services such as accounting, advertising, and job placement. Moreover, it includes major private universities, such as Stanford, and important research institutions, such as SRI International and Lawrence Berkeley Laboratory, which provide services throughout the world and thus constitute part of the region's economic base. This sector also includes large engineering and architectural firms which sell many services to parties outside the region.

Local-serving services, both retail and professional, while showing rapid employment growth, do not merit consideration as part of the economic base since they primarily serve the local population. However, certain retail services, such as hotels and motels, which are oriented toward tourism, will be included under the tourism industry.

4.2.10 The Public Sector

As the predominant western metropolis until well into this century, San Francisco became the site of most western regional offices of the federal government. San Francisco is still the most important western center for federal activities in human resources and national defense.

Most federal government activities and many state government functions in the Bay Area are financed with fees, revenues or tax dollars generated outside the area, and thus contribute substantially to the region's economic base.

Over the period 1972-1978, federal and state government employment in the Bay Area was virtually stable, at about 165,000 jobs (about 90,000 federal and 75,000 state). However, this stable employment level masks some shifts of considerable magnitude. Civilian employment in defense-related federal government declined from 45,000 to less than 35,000, probably due to the winding down of the Vietnam War. In other federal activities employment increased from 52,500 to 56,500. Within state government, higher education increased in employment from 39,300 to 46,300 and other state functions from 26,200 to 29,000.

4.3 DEFINITION OF THE BAY AREA'S ECONOMIC BASE

The individual industries identified as the most important components of the region's economic base can be grouped into six major sectors. Two have been drawn from manufacturing--food processing and high-technology manufacturing--while important non-manufacturing sectors include the office industry, tourism, long distance transportation and the public sector.

The following sections outline the unifying concepts behind the sector groupings and briefly describe their importance to the region's economic base.

4.3.1 High-Technology Manufacturing

High-technology manufacturing is an innovative, research-oriented industry that has been growing rapidly in the Bay Area over the past several decades. It includes computers, electrical equipment and supplies, guided missiles and space vehicles, and professional and scientific instruments. The firms in this sector share the need for unique labor resources, access to scientific innovation, and proximity to other high-technology activities. There are some interindustry linkages in this sector, primarily the use of electronic components in the manufacture of instruments and computing machinery.

4.3.2 The Office Industry

The "office industry" is a relatively new term used to describe a significant part of the service economy. Although the office sector is largely described in terms of occupational rather than industrial classifications, there are several industries such as basic finance and insurance and basic services, which employ very large proportions of white collar workers and require substantial office space. There are also a number of corporate headquarters of all types of industries in the Bay Area which clearly export their services and require office buildings.

All office activities share the need for a specialized labor force, face-to-face communication, and a wide range of business services. Most of the office industry has tended to locate in downtown San Francisco, Oakland and in Santa Clara County, but there are a number of subcenters emerging in the region, often providing supporting services to headquarters operations.

4.3.3 Tourism

Tourism is also difficult to describe in terms of industrial classifications. Industries serving tourists, such as eating and drinking places, hotels, motels, convention centers, museums and the cultural facilities, parks, and historical places also serve the local population. It is difficult to estimate with any accuracy the number of tourist-oriented jobs in the region, but it is clear that the Bay Area will continue to attract large numbers of tourists and conventioners because of the physical beauty and cultural appeal of the area.

4.3.4 Food Processing

Food processing, while currently an important industry in the Bay Area, has been declining over the past several decades. However, when viewed in the context of its supplying industries, and those to which it sells, it constitutes the focal point of a growing industrial complex. The growing of food, processing, packaging, shipment, and wholesale and retail sales account for a substantial amount of economic activity. This complex is grouped around a common set of resource and transportation advantages, and the historical importance of the food industry in the Bay Area.

4.3.5 Long-Distance Transportation

Transportation by rail, truck, air, and water provides significant strength to the region's economic base. Historically, the ports in the San Francisco Bay have played a major role in the development of the economy, as has rail transportation of both goods and passengers. Currently, these transportation facilities provide essential services to nearly all the major economic sectors of the Bay Area. Shipments of manufactured products, international trade, business and tourist travel all rely on long distance transportation networks. Ongoing expansion of these networks has contributed to the continuing viability and growth of a number of Bay Area industries.

4.3.6 The Public Sector

Federal government is important as a service sector in the Bay Area because the region serves as a headquarters for government activities for several western states, and the presence of major government activities and enterprises has significant effects on other Bay Area industries. Although largely regional and local-serving in nature, many state government functions involve substantial exports.

4.4 REFERENCES

- (1) California Employment Development Department, Annual Planning Information, Sacramento, 1979.
- (2) Security Pacific National Bank, Economic Trends in the Seventies, San Francisco Bay Area, San Francisco, 1978.
- (3) U.S. Department of Commerce, Bureau of the Census, Census of Manufactures, Washington, 1972.
- (4) _____, 1972 Census of Transportation, Commodity Transportation Survey, Area Report 7, Washington, 1975.
- (5) University of California Cooperative Extension, Bay Area Input - Output Model, 1967 and 1974, Berkeley, 1978.

CHAPTER 5

HIGH-TECHNOLOGY MANUFACTURING

5.1 INTRODUCTION

Over recent years, the high-technology manufacturing sector has become more complex and interdependent, as well as more important as a source of basic income for the region. Chapter 4's analysis of the Bay Area's economic base identified the high-technology manufacturing groups, including aerospace, computers, and electronic components as key industries in the economy. These industries have consistently ranked high in value added and employment. Industries in the more dynamic fields with diversified sources of demand, such as electronics and computers, have become relatively more important, while those serving unique or single markets, such as aerospace, have been less predominant and are generally characterized by stable employment levels. The proportion of the industry's output which is exported has increased, and this, together with rapid growth, makes high-technology crucial to the Bay Area's economic base.

Purchases and sales of intermediate goods within the industry in the Bay Area are important, reflecting a high degree of self-sufficiency. Regional interdependence also means that high-technology growth has fostered the growth and development of other sectors of the Bay Area economy. At the same time, it has itself been nurtured by close association with Stanford University, one of the world's most important centers for research in electrical engineering and applied physics.

These attributes have contributed toward the development of one of the most dynamic and innovative industry complexes in the world. The Bay Area's high-technology manufacturing sector is not only growing in the volume of income it brings into the region and in the jobs it provides, but it is also the leading center for new product development and for rapid formation of companies which supply world-serving technologies.

The invention of the vacuum tube by Lee De Forest, Herbert Van Etten and Charles V. Lockwood in the summer of 1912 in Palo Alto, California provided the initial basis for the development of the electronics industry on the San Francisco Peninsula. Many firms were to proliferate around the educational and research institutions in the Stanford-Palo Alto area. Over the years, the seemingly boundless inventiveness, ingenuity, and entrepreneurial talents of the Bay Area pioneers in the electronics industry, many of them graduates of Stanford University, led to the rapid formation of companies and spin-off firms.

World War II provided the major stimulus for the accelerated growth of the young electronics industry. At this time the military was the major market for electronics products, in the form of sophisticated weaponry and guidance, control, and surveillance systems. The need for advanced systems encouraged rapid innovation. The Korean War and the "Cold War" sustained this research and development. Byproducts of the military systems were later to have important applications for growing civilian markets.

Research firms tended to cluster tightly around the Palo Alto area. The opening of Stanford Industrial Park in 1950 provided a further incentive for firms to locate there. Nearby Ames Research Center at Moffett Field also attracted research firms while Lockheed Missiles and Space Company in Sunnyvale, which received the largest single share of military procurement contracts in 1962, influenced the development of a large number of production companies that were the beneficiaries of extensive sub-contracting by Lockheed.

Early growth of the high-technology manufacturing sector has concentrated in the counties of Santa Clara and San Mateo and although some growth has occurred in the East Bay, the Livermore Valley, and the Santa Rosa area of Sonoma County, the bulk of the industry is still in these same two counties. The nickname "Silicon Valley", widely used to refer to an area roughly bounded by Palo Alto in the north and Santa Clara in the south, reflects this concentration.

5.2 DEFINITION OF HIGH-TECHNOLOGY MANUFACTURING

It is important to note that the term "high-technology" refers to the nature of final products, not necessarily to their production processes. While highly capitalized, the high-technology industries continue to use many labor intensive techniques. High-technology manufacturing includes the following product groups:

Aerospace and ordnance (SIC 376). In the Bay Area, this classification largely consists of complete guided missiles. A single firm, the Lockheed Missiles and Space Company, constitutes virtually all of the manufacturing activity and their output tends to be prototype research and experimental vehicles, rather than assembly line products.

Office and computing machinery (SIC 357). This product group includes office machines such as typewriters and calculators, as well as computers and computer peripherals. In the Bay Area, computing machinery is by far the most important section of this product group.

Electrical machinery, equipment and supplies (SIC 36). Products in this group include electric transmission and distribution equipment, electrical industrial apparatus, household appliances, radio and television sets, communication equipment, and electronic components. Most important is electronic components, followed by electric transmission and distribution equipment, and communication equipment.

Professional and scientific instruments (SIC 38). This group includes a wide range of products, such as measuring and control instruments, optical goods, photographic equipment, and watches and clocks. The most important Bay Area products are measuring and control instruments.

Most high-technology products are innovative and state-of-the-art in nature, serving new or rapidly expanding markets. Thus, product characteristics change rapidly over time, and the new and expanding demand markets make high-technology industries the fastest growing of all manufacturing groups.

5.3 EMPLOYMENT LEVELS, GROWTH, AND DISTRIBUTION

5.3.1 Employment Levels

The importance of high-technology manufacturing to the Bay Area economy can be seen in Figure 5.3-A, which contrasts the region's structure of manufacturing employment with that of the United States as a whole. In 1977, nearly 40 percent of all manufacturing in the Bay Area was in the high-technology sector, compared to only 15 percent for the nation. The most important high-technology activities in the Bay Area were electronic components and office and computing machinery, which together accounted for over 20 percent of all manufacturing employment. Most other high-technology groups individually accounted for between two and five percent of all Bay Area manufacturing. The largest group nationally was other electrical equipment, which largely consists of consumer goods, such as radio and television sets and household appliances. The office and computing machinery and electronic components groups accounted for less than four percent of national manufacturing employment.

5.3.2 Employment Growth

The importance of high-technology activities can also be examined from the standpoint of employment growth. Figure 5.3-B shows high-technology wage and salary employment in 1964, 1972, and 1977 for the U.S., California, and the Bay Area, together with average annual growth rates. Over the 1972-1977 period, high-technology manufacturing in the Bay Area grew by some 50,000 jobs, or at an annual average rate of over eight percent. Some specific groups experienced phenomenal growth--computers at over 14 percent per year and electronic components at nearly 12 percent annually. By comparison, national yearly growth rates were only moderate--1.7 percent overall, with the important groups of computers and electronic components growing at five percent and three percent, respectively. California growth rates were generally between those of the Bay Area and the U.S., with a few exceptions. The drop in aerospace employment in California has been precipitous, with only 36,000 employees in 1977, contrasted with 50,000 in 1972 and 100,000 in 1964. Aerospace employment in the Bay Area, has been relatively constant over the past 15 years. California growth outstripped that of the Bay Area in only two employment groups, other electrical equipment and instruments, over the 1972-1977 period.

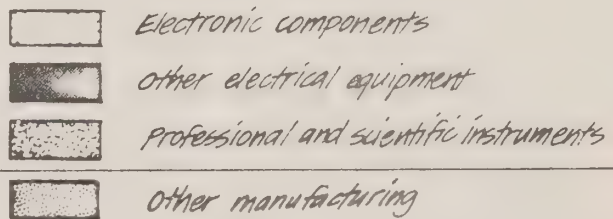
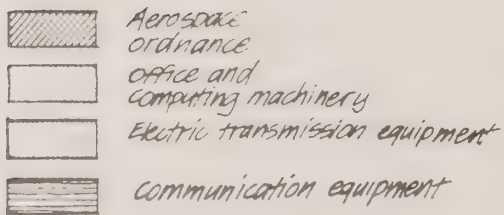
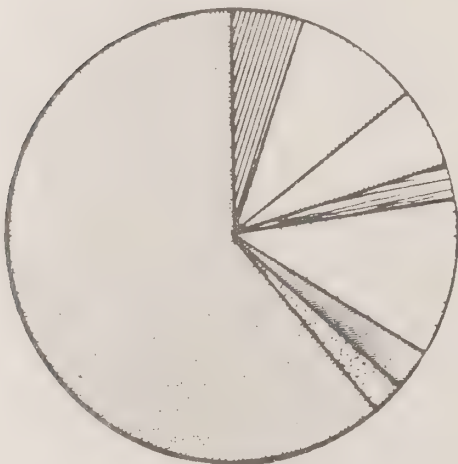
The 50,000 high-technology jobs created in the Bay Area over this period accounted for an impressive 15 percent of total regional job growth (one job in seven). Over one-fifth of all high-technology jobs created nationally over the 1972-1977 period were located in the Bay Area.

Figure - 5.3-A

Comparative structures of manufacturing employment, 1977

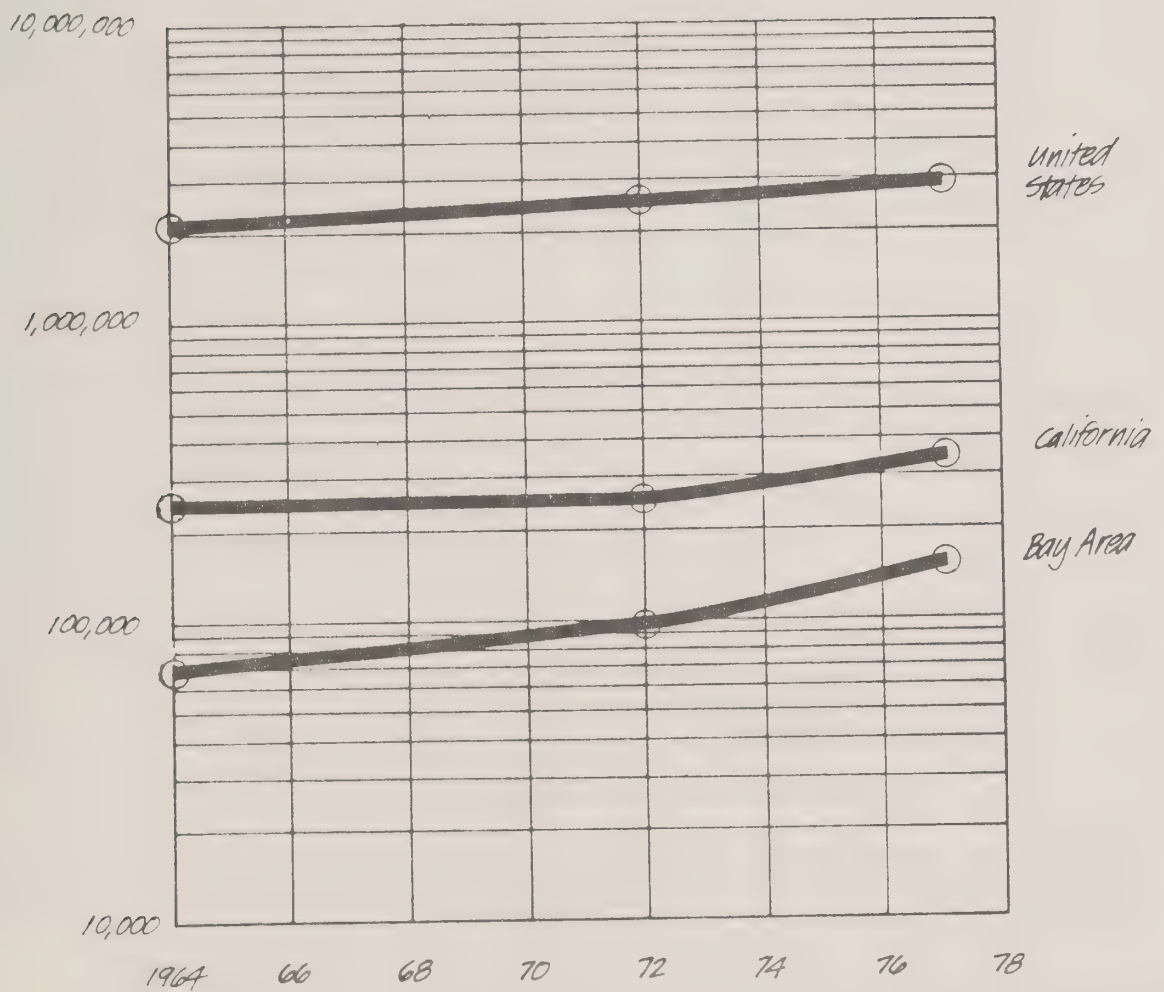
BAY AREA

UNITED STATES



Sources: U.S. Bureau of Labor Statistics, Employment and Earnings
California EDD, California Employment and payrolls

Figure 5.3-B
Employment trends in high
technology manufacturing



Sources: California Employment Development Department,
Wage and Salary Employees by Industry.

U.S. Department of Labor, Bureau of Labor Statistics,
Employment and Earnings

5.3.3 Distribution

In 1976, there were over 1,000 employment sites in the region engaged in high-technology manufacturing (about 15 percent of all manufacturing sites). Table 5.3-1 shows the county by county distribution of sites, together with the average number of employees per site.

Santa Clara County had over half of the employment sites, and well over half of the employment. Next in terms of employment were the counties of San Mateo, Alameda and Contra Costa. San Francisco, along with the north Bay counties, had relatively unimportant levels of high-technology manufacturing. However, Hewlett-Packard's microwave division in Santa Rosa promises to be one of the largest single employment sites in the Bay Area.

Manufacturing sites for electrical equipment and supplies are typically larger than for the rest of the manufacturing industry. This can be seen in Santa Clara County where in 1976 almost 20 percent of these sites had 100 or more employees, in contrast with only 10 percent for the balance of manufacturing.

In 1975, Palo Alto and Sunnyvale had approximately 61,000 persons working in high-technology industries. This was 54 percent of the Bay Area total (Table 5.3-2). Seventy-nine percent of the region's high-technology employment was in Santa Clara County, with an additional 10 percent in San Mateo. Some growth has occurred in other areas throughout the region, most notably the East Bay, Livermore Valley, and Santa Rosa, but the proportions are relatively small. In looking at the major growth centers from 1965 to 1975, the proportion of high-technology employment in Santa Clara and San Mateo counties did not change perceptibly over that period.

5.4 LOCATIONAL PATTERNS

Locational factors can be viewed in a general economic production function context where the cost of all the factor inputs that eventually determine the price to intermediate producers and consumers are considered. The major locational factors can be summarized as access to:

- Research and technological innovation
- Labor supply
- Land
- Input materials (both raw and intermediate)
- Supportive and competitive industries
- Intermediate producers
- Consumer markets
- Amenities (climate and attractive surroundings)
- Reliability of electricity supplies

TABLE 5.3-1
HIGH TECHNOLOGY MANUFACTURING SITES
-1976-

<u>County</u>	<u>Number of Sites</u>	<u>Average Jobs per Site</u>	<u>Total Jobs</u>
ALAMEDA	154	40	6,160
CONTRA COSTA	65	30	1,950
MARIN	23	50	1,150
NAPA	10	20	200
SAN FRANCISCO	72	30	2,160
SAN MATEO	123	80	9,840
SANTA CLARA	573	180	103,140
SOLANO	0	0	0
SONOMA	20	85	1,700
REGION	1,040	120	124,800

Source: U.S. Department of Commerce,
Bureau of the Census
County Business Patterns, 1976.

TABLE 5.3-2
MAJOR HIGH TECHNOLOGY MANUFACTURING CENTERS

	1965	1975
<u>ALAMEDA COUNTY</u>		
Hayward	0	1,200
San Leandro	2,500	1,800
<u>CONTRA COSTA COUNTY</u>		
Concord	0	1,000
<u>SAN MATEO COUNTY</u>		
Redwood City	5,000	2,700
Menlo Park	400	2,000
San Carlos	2,400	4,200
Burlingame	400	600
<u>SANTA CLARA COUNTY</u>		
Sunnyvale	17,200	40,500
Palo Alto	12,500	20,800
San Jose	8,100	21,300
Santa Clara	800	4,100
Mountain View	4,500	6,700
Cupertino	0	2,500
Unincorporated	4,400	5,600
<u>SONOMA COUNTY</u>		
Santa Rosa	200	2,100
<hr/>		
TOTAL IN MAJOR CENTERS	58,400	117,000
REGIONAL TOTALS	69,900	126,400

Source: ABAG Projections 79 data base

Ranking high on the list of important factors in the location of high-technology firms is access to research and technological innovation, labor supply, land, and supportive and competitive industries. This is in contrast to many manufacturing industries, where the cost of transportation of input materials to production points, such as with the steel or lumber industries, contributes significantly to overall production costs. Indeed, the high-technology industry has been termed "footloose" because transportation costs have not appeared to be influential in the locational choices of high-technology firms. Instead, the close interrelationships between industry, the university, and the entrepreneur appear as key factors in the history of high-technology development in the Bay Area.

5.4.1 Transportation Access To Input Materials

Why is the cost of transporting materials relatively unimportant? Essentially, the ratio of value of intermediate components and finished products to their respective weights is very high, making transportation costs as a proportion of total costs relatively insignificant in determining the ultimate cost of products to the consumer.

A major part of the production process consists of the assembly of a large number of small, lightweight components which are being increasingly miniaturized. The advent of the integrated circuit has lead to smaller and smaller components with more and more functions. Since products such as hand-held calculators and micro-processors in offices and in homes are lightweight and easily transportable, this has in turn lead to an expansion of markets which are both national and, increasingly, international.

5.4.2 Access to Research and Technological Innovation

"The Federal Telegraph Company, which was located in Palo Alto and whose origins go back to a Stanford University graduate who had set up the first operating radio-telephone on the West Coast in 1908, is the prototype of the close interrelationship between the industry, the university, and the entrepreneur in developing the science-based electronics complex in Santa Clara County"(4). Later, the discovery in 1912 of the vacuum tube by Lee de Forest, and several other Federal Telegraph employees is considered to have been the birth of electronics in the valley. Over the years, numerous innovations in the high-technology industries have sparked the establishment of many companies, both large and small, which in turn have merged or spun-off into other companies.

It was not only these early discoveries, but also the continuing commitment of Stanford University, through the establishment of an excellent engineering program and the Stanford Industrial Park in 1950, that nurtured an industry where technological change was not only rapid, but seemingly non-stop. The proximity of major universities and research centers continues to foster the growth of the industry, since rapid innovation means that management is more complex, marketing is challenging, and the research and development functions are more important in high-technology manufacturing than for most other industries.

5.4.3 Access to Labor Supply

Clearly, access to the steady stream of engineering and science graduates from Stanford University was important for the high-technology industry, where innovation and access to new ideas was essential to maintenance of a competitive position in the market. Also, the rapid development of the industry, spurred on by World War II and the Korean War, led to dramatic rates of in-migration which from 1950 to 1965 accounted for about 70 percent of population growth. During this period, Santa Clara County population tripled from 291,000 to 883,000, largely in response to labor needs of high-technology industries.

While access to the professional and skilled labor force in the region, particularly in the Palo Alto-Sunnyvale area continues to be important, the rapid expansion of the industry has put severe pressure on the housing market. Housing development has failed to keep pace with industry-related growth demands, and this has caused many firms to look for new locations, particularly in areas with low-wage labor.

Since the actual manufacturing phase of the high-technology industry is very labor intensive, it has become profitable to move assembly operations as far away as Asia, since savings in labor costs so far outweigh the additional transportation costs. In 1963, Fairchild was the first U.S. electronics corporation to set up a factory in Hong Kong, and others have followed with locations in Korea, Singapore, and Indonesia.

5.4.4 Access to Supportive and Competitive Industries

A study by Harold Wilde in 1965 suggests the influence of agglomeration economies, that is, the proximity to research institutions and complementary and competitive firms in locational decisions (7). The large value of Lockheed military procurement contracts was a prime impetus for the development of Lockheed and associated subcontracting firms. Lockheed set up a research laboratory in the Stanford Industrial Park in 1956 and later moved to Sunnyvale. This proliferation of small- and medium-sized subcontractors for different phases of the production process is characteristic of high-technology industries.

5.4.5 Access To Land and Amenities

Large tracts of relatively inexpensive land were important in the early development of high-technology industries in Santa Clara County. Many of the buildings were one or two-story, with approximately 250 - 350 square feet per employee. For example, Lockheed, in 1957 purchased 700 acres in Sunnyvale for its new Missiles and Space Division.

The county had its early economic roots in an agricultural economy and a central business district location was not as essential to high-technology manufacturers as to many other types of firms. However, the available farm land was attractive for the development of the industry. Also, land outside the major cities of San Francisco and San Jose was relatively inexpensive and adequate amounts could be purchased at reasonable prices for initial development and later expansion.

Major highways and the Southern Pacific Railroad along the Peninsula made the central cities accessible when necessary. Furthermore, both airports and seaports were nearby. The attributes of the available land went beyond its abundant supply and reasonable price. Clearly, the associated amenities, attractive climate and surroundings, influenced many a person to stay once they had arrived.

5.5 EMPLOYMENT BY OCCUPATION

The occupational compositions of industry employment illustrate the unique position of high-technology groups within all manufacturing, as well as the special role of Bay Area firms in industry innovation.

Table 5.5- 1 shows the 1970 occupational composition for two major high-technology manufacturing groups, aerospace and ordnance, and electrical equipment and supplies. Data are shown for the two major Bay Area SMSAs, San Jose and San Francisco-Oakland, in contrast with the rest of California (excluding the Bay Area). Data are also shown for the balance of manufacturing activity.

Professional, technical and kindred workers, including engineers, computer specialists, scientists, mathematicians, and a variety of technicians, comprised 12 percent of employment in non-high-technology manufacturing in the rest of California. The proportion of these workers in the electrical equipment industry was 25 percent, and in aerospace it was over 40 percent. The proportions were not strikingly different for the San Francisco-Oakland SMSA. However, in the San Jose SMSA, professional and technical workers accounted for some 20 percent of employees in non-high-technology manufacturing, nearly 35 percent in electrical equipment, and over 45 percent in aerospace.

TABLE 5.5-1
COMPARATIVE OCCUPATIONAL STRUCTURES, 1970

OCCUPATIONAL GROUP	Aerospace, ordnance			Electrical machinery			Balance of manufacturing		
	CA.	S.J.	SF-O	CA.	S.J.	SF-O	CA.	S.J.	SF-O
1. Professional, technical	41%	46%	46%	25%	34%	24%	12%	20%	11%
2. Management, administrative	8	8	8	8	8	8	7	8	8
3. Sales, clerical	19	18	14	17	17	19	17	18	20
4. Crafts, kindred	12	13	14	12	11	14	21	18	23
5. Operatives, exc, trans.	17	12	18	35	27	32	34	27	29
6. Other*	3	3	2	3	3	3	9	9	9
TOTAL JOBS('000)	58.8	19.2	2.1	141.7	40.5	22.4	1077.7	65.3	186.8

*Includes transport equipment operators, laborers, service workers

SOURCE: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population.

5.6 REFERENCES

- (1) ABAG, Projections '79 data base.
- (2) California Employment Development Department, California Employment and Payrolls, Sacramento, April - June, 1977.
- (3) U.S. Department of Commerce, Bureau of the Census, County Business Patterns, Washington, 1976.
- (4) Santa Clara County Planning Department, A Study of the Economy of Santa Clara County, California, 1967.
- (5) U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population, Report PC (1)-D6, Washington, 1972.
- (6) U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, 1979.
- (7) Wilde, Harold, The Location of the Electronics Industry in San Mateo and Santa Clara Counties, 1952-1964, MBA Thesis, University of California, Berkeley, 1965.

CHAPTER 6

THE OFFICE INDUSTRY

6.1 INTRODUCTION

Instead of focussing on goods produced by manufacturing industries, this section of the report examines services provided by the office industry and its relationship to the region's economic base. The office industry is difficult to define according to Standard Industrial Classification (SIC) coding rules, because office functions occur in virtually all SIC industry groups. However, the growth of office employment reflects the trend away from goods and towards services, and the importance of the office sector as a contributor to the region's economic base necessitates its analysis.

Several major changes have contributed to the reorientation of the economy towards services. The first is organizational. Large businesses in both public and private sectors have expanded and become more complex with the addition of a high-level layer of decision making and job-providing organizations. This is reflected in the rapid development of: international corporations; multi-industry conglomerates and holding companies; huge corporations with multiple branches; and government organizations coordinating many functions or processing large numbers of uniform transactions.

A second force for change is technological. The 1970s have seen a remarkable proliferation of newly designed, highly adaptable business and office machinery. Among the recent and continuing technical developments have been: electronic data processing machines, peripheral equipment, and micro processors; hand-held calculators including those with programmable capability; fast, inexpensive, and specialized duplicating equipment; electronic typewriters with type change, eraser, and word processing features; and push-button telephones and automatic support equipment.

A third distinctive characteristic that emerges as a result of these recent organizational and technological developments is the need for interpersonal communication and contact. The management and operation of large job providing organizations involve quickly arranged face-to-face communications and immediate accessibility to specialized information. Large metropolitan areas are able to supply communication and information advantages which include: ease of inter-organizational personal contacts; the availability of financial, legal, consulting, engineering, and business services; and the availability of intercity and intercontinental transportation.

Sometimes high market area accessibility and the presence of other units within the organization structure are also contributing factors.

6.2 DEFINITION OF THE OFFICE INDUSTRY

The concept of the office industry is becoming important in view of the national economy's structural shift away from goods production towards services. This shift involves the expansion of forms of information and communication used by large organizations, and of the reproduction and evaluation of this information so that it can be used in the wide range of decisions that have to be made by large multi-product, multi-location organizations (4).

The conventional approach to the definition of an industry is in terms of its end product, e.g., the automobile industry or the steel industry. Industries have also been identified by the processes they perform, such as medical services, insurance, and banking. Many of these services have been recognized as being as much a part of a community's economic base as the goods-producing industries. An integral portion of this services-driven economic base is that segment of services conducted in offices rather than factories. Identification of this sector is the basis for the treatment of offices as an industry in this report.

The enlargement of the economy's service sector and the concurrent expansion of office activities can be placed in a locational framework by identifying two market segments for office activities: (1) basic, comprising export market and middle market activities; and (2) local-serving activities.

Export activities consist of information flows and decisions made by major corporate headquarters and other central offices of large organizations. These organizations export their decisions, reports, and information outside the region, guiding or influencing complex operations that are national or international in scope. Because they draw extensively on economies outside the region and rely on linkages with other businesses, the benefits of concentration are high, and only major urban centers can meet their needs.

Middle market activities include regional, subregional, and national office support operations, as well as utilities and headquarters-serving functions such as advertising and public relations. Businesses providing these services receive communications and information from outside the region and direct them inward. Middle market functions are found in almost every region and are dependent on a sizeable white-collar labor pool, which restricts their location to large central cities and nearby suburbs.

Local-serving office activities are an increasingly large segment of the local-serving sector, and include branch banks, real estate offices, doctor's offices, local government offices, law firms in general practice, and similar establishments. They are usually located in subregional centers of approximately 150,000 population and larger, close to the population being served.

Because the office industry cuts across many sectors, some engaged in manufacturing and some themselves engaged in services, it is difficult to identify and measure its employment levels using the SIC categories. However, the relationship of the office industry to SIC categories has been approximated using occupational data. First, occupations which are typically found in offices, and not directly involved in production, were identified. These include: professional, technical and kindred workers; managers and administrators; sales workers; and clerical and kindred workers.

In some industries, these occupational categories are not predominantly office workers, and where possible these have been deleted from the industry's office worker total. For example, since their work is not predominantly carried out in an office, sales workers in wholesale trade, general merchandise, food stores, auto dealers, and gas stations have not been included; neither have professional and technical workers in entertainment and recreational services, hospitals, other health services, and public and private education.

6.3. EMPLOYMENT LEVELS, GROWTH, AND DISTRIBUTION

Two sources of data are available to estimate office industry employment: (1) the California Employment Development Department (EDD) employment reports of wage and salary workers by industry and estimated occupational distributions in individual industry divisions; (2) the 1970 Census of Population, covering all workers by occupation and industry (6).

The 1970 Census was used to obtain the sum of the proportions of professional, managerial, clerical, and sales employees in the Bay Area. Comparable proportions for 1978 were obtained from the 1979 EDD Annual Planning Information Reports for the four SMSA's in the Bay Area (2).

These percentages were then applied to 1970 and 1978 EDD employment data, disaggregated by industry divisions, to obtain estimates of office employees for the two years. These estimates are shown in Table 6.3-1, and indicate the following:

- (1) the percentage of office employees in the Bay Area's work force has increased from 45 to 51 percent in the eight years from 1970 to 1978;
- (2) the number of office employees has increased by about 300,000 in the same eight years, enlarging the Bay Area's office work force from 863,000 to 1,154,000 employees;
- (3) the increase in office employment is almost 60 percent of the increase in all employment;
- (4) the largest relative increases in office employment occurred in Services (63 percent), Finance, Insurance and Real Estate (46 percent), and Trade (42 percent); and

Table 6.3 1

Office Employees in the Bay Area by Industry Division,
1970 and 1978

Industry Division	Office Employees (1000's)		Wage and Salary Workers (1000's)		Percentage of Office Workers	
	1970	1978	1970	1978	1970	1978
All Divisions	862.9	1153.9	1776.9	2275.7	45	51
Agriculture	3.8	4.0	25.2	24.9	15	16
Mining	1.1	1.0	2.3	2.7	49	37
Construction	24.3	32.3	84.1	100.9	29	32
Manufacturing	149.2	209.6	339.2	419.1	44	50
T.C.U.	75.2	73.4	156.6	152.9	48	48
Trade	129.5	183.6*	361.2	496.3	36	37*
Wholesale Trade	45.6		99.1	129.6	46	
Retail Trade	83.9		262.1	366.7	32	
F.I.R.E.	107.8	156.9	114.7	163.4	94	96
Services	124.0	201.9	317.9	480.8	39	42*
Government	248.0	291.2	375.7	434.7	66	61

*EDD Occupational Reports combine Wholesale and Retail Trade. Salespersons in these Divisions are not included in office estimates.

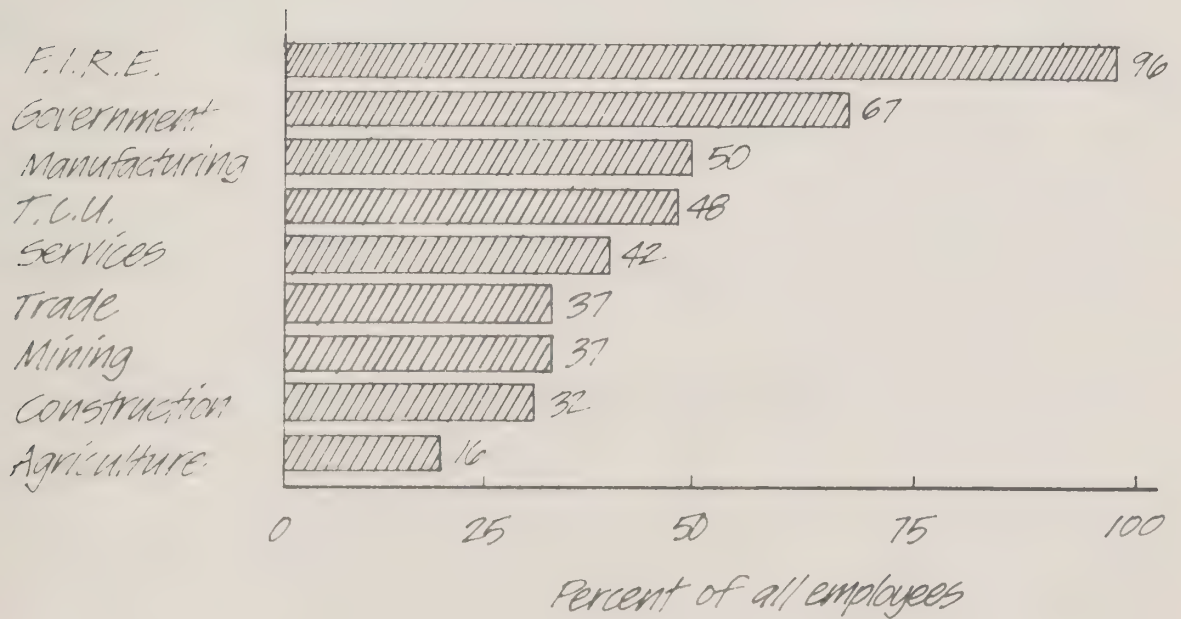
**EDD data has been adjusted to omit professional workers in Entertainment, Health Services and Educational Services.

Sources: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population, Report PC(1)-D6, (Washington, 1972).

California Employment Development Department, Annual Planning Information, (Sacramento, 1979).

Figure 6.3-A

Proportions of office employees in Bay Area Industry Divisions, 1978



Sources:

U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population, Report PC (1)-D6, (Washington, 1972).

California Employment Development Department, Annual Planning Information, (Sacramento, 1979).

- (5) the industry division with the largest increase in the office share of its work force is Manufacturing (from 44 percent in 1970 to 50 percent in 1978). This reflects the expansion of the high-technology industry, with its high proportions of professional, managerial, and clerical employees.

The number of office employees in each of the Bay Area's counties in 1978 was estimated using the same method as for the region. County employment data by industry division was multiplied by the percent of office workers for the SMSA in which the county was located. The resulting office worker estimates are presented in Table 6.3-2, together with each county's total employment and population estimates.

Santa Clara County, the Bay Area's largest county in terms of population and employment, also has the largest office work force, 310,800 employees. San Francisco County, with a smaller population, has 280,400 office workers, and Alameda County has 239,300 office workers. In the peripheral counties of the region the concentrations of office employees are small in absolute numbers as well as relative to population and employment.

Table 6.3-2 also lists a factor which can be used to estimate the local-serving segment of office employee activity. To reflect the demand for office workers at both the level of direct service to local populations and at the level of service to other industries, this office employee requirement factor is a function of both population and employment instead of employment alone.

The distribution of local-serving office activity among counties shown in Figure 6.3-B indicates the effect of population as a generator of office jobs. The largest number of local-serving jobs is in Santa Clara County, the county with the largest population and the highest employment in the region. Second is Alameda County, again with a large population contributing to the local-serving component. Although San Francisco County has a large amount of employment (520,800 compared with Santa Clara's 594,100), the county's smaller population generates less local-serving office employment.

San Francisco has been recognized in many studies and reports as one of the major office centers of the United States. The status of San Francisco reflects its economic role as the West Coast location for major corporate and government offices. A comprehensive report published in 1972 by the New York Regional Plan Association tabulated the number of corporate headquarters listed in the 1965 Fortune directories of largest industrial and non-industrial firms(5) and ranked the major U.S. office centers as shown in Table 6.3-3.

Table 6.3-2

Office Employment as a Proportion of County
Population and Employment

County	1978 Employment	1978 Population	1978 Office Workers	Factor*
Region	2275.7	4983.4	1154.7	.159
Alameda	481.6	1101.9	239.3	.114
Contra Costa	187.7	613.4	91.4	.115
Marin	65.8	222.9	33.2	.110
Napa	32.4	94.0	13.8	.110
San Francisco	520.8	658.7	280.4	.238
San Mateo	237.7	585.1	114.2	.139
Santa Clara	594.1	1227.5	310.3	.171
Solano	63.8	208.3	32.9	.119
Sonoma	36.8	271.6	39.7	.108**

*Factor = Office Workers/ (Empl. + Pop.)

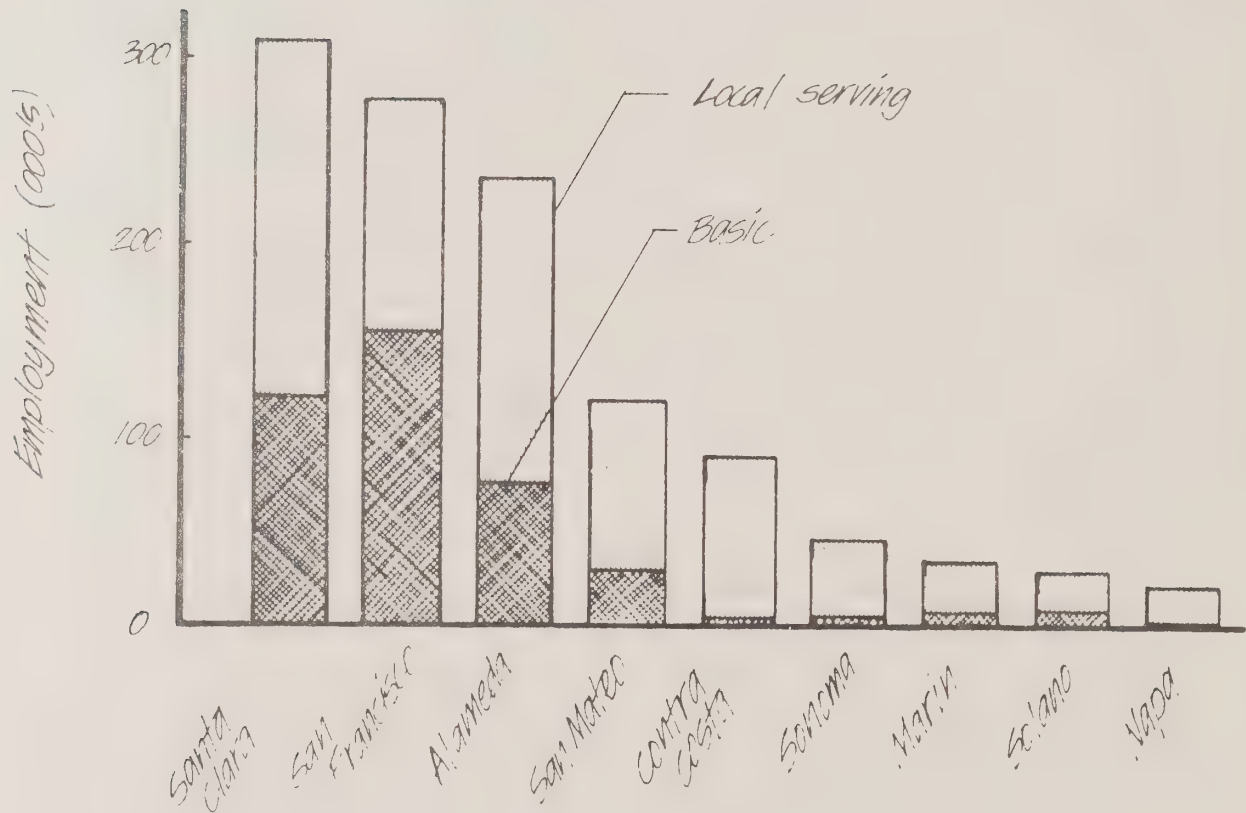
**Minimum requirement factor

Sources: California Employment Development Department, Annual Planning Information, (Sacramento, 1979).

California Department of Finance, Population Research Unit, County Population Estimates for July 1, (Sacramento, 1978).

Figure 6.3-B

Office employees in Bay Area Counties by basic and local-serving components, 1978



Source:

ABAG staff analysis, based on California Employment Development Department, Annual Planning Information (Sacramento, 1979)

TABLE 6.3-3

LOCATIONS OF MAJOR CORPORATE HEADQUARTERS: 1965

Location of Headquarters	Industrial	Non- Industrial	All Headquarters
New York	151	59	210
Chicago	48	26	74
San Francisco	14	7	21
Detroit	16	12	28
Philadelphia	15	6	21
Los Angeles	12	14	26
Boston	9	6	15

Source: Regional Plan Association, The Office Industry: Patterns of Growth and Location, Cambridge, Mass., MIT Press, 1972.

This preeminent status is important to the region's economy because income generated by these corporations is drawn into the region and stimulates local activities.

The number of office workers employed in basic (export and middle market) activities is shown in Table 6.3-4. These estimates are the residual left after accounting for local-serving office workers.

Locational distribution of the basic component of office employment is quite different from the local-serving segment. San Francisco is highest at 153,000 jobs, followed by Santa Clara County with 114,000 and Alameda County with 68,300. The presence of large corporate headquarters and government establishments in these counties contributes to these concentrations.

As would be expected, the more distant and peripheral counties of the region have little basic office activity. However, while Contra Costa and Marin Counties, and to a lesser extent, San Mateo County, have relatively few basic office activities, as bedroom communities to San Francisco they may have a latent labor force for export and middle market office activity expansion.

6.4 MAJOR CORPORATE HEADQUARTERS IN THE BAY AREA

The basic component of office industry employment can be further analyzed by examining the presence of major corporate headquarters as reported in the annual Fortune directories of industrial and non-industrial firms (3). The heavy concentrations of corporate headquarters contributes significantly to the locational advantages which make the Bay Area a major office center in the nation.

Table 6.3-4

Office Employment and Estimates of Local-Serving
and Basic Segments, by County: 1978

County	1978 Office Employment	Local-Serving* Office Employment	Basic (Export and Middle Market Office Employment
Region	1154.7	784.0	370.7
Alameda	239.3	171.0	68.3
Contra Costa	91.4	86.5	4.9
Marin	33.2	31.2	2.0
Napa	13.8	13.5	0.3
San Francisco	280.4	127.4	153.0
San Mateo	114.2	88.9	25.3
Santa Clara	310.8	196.7	114.1
Solano	32.9	29.9	3.0
Sonoma	38.7	38.7	0.0

*Based on "Minimum Requirements" assumptions (see Table 4.3-2).

Source: ABAG staff analysis, based upon California Employment
Development Department, Annual Planning Information,
(Sacramento, 1979).

Counting headquarters is a very crude indicator of their contribution to the office industry. The Fortune directory rankings are based on sales, which is not necessarily the best indicator of size. However, the Fortune list is consistent and continuously available, allowing some inferences to be made on the basis of year-to-year comparisons.

The Fortune list shows an increase in the number of corporate headquarters located in the San Francisco-Oakland and San Jose SMSAs. This trend is shown for selected years from '65 to '75 in Table 6.3-5:

TABLE 6.3-5

Major Corporate Headquarters in the Bay Area

Category of Firm	Year			
	1965	1972	1975	1978
Total listed: SFO + SJ	26	37	45	43
Industrial Firms: 1st 500	12	15	13	17
Industrial Firms: 2nd 500	*	12	18	12
Non-industrial Firms: 1st 300	14	10	14	14

*2nd 500 firms not listed in 1965

Sources: Fortune Magazine, various issues.

The industrial listing includes such important firms as Crown Zellerbach, Standard Oil of California, Kaiser Aluminum and Chemical, Levi Strauss, Del Monte, Clorox and some newer names from the South Bay: Hewlett-Packard, Memorex, Fairchild Instrument, Varian, and Intel. The non-industrial list contains Bank of America, Wells Fargo and Crocker National Banks, Transamerica, Dean Witter Reynolds, Safeway Stores, Southern Pacific, Pacific Gas and Electric, and others.

Although the exact total of those locally employed in the Bay Area's corporate headquarters is not available, estimates amount to more than 100,000 employees. In addition to the headquarters count, another measure of the significance of the Bay Area's headquarters offices is the number of jobs within corporate control in all locations. In 1972, firms headquartered in the region controlled 648,000 jobs. By 1978, the number had increased 30 percent, to 843,000 jobs.

Of the 43 Bay Area headquarters listed in the 1978 Fortune directory, 10 industrial organizations are located in Santa Clara County. Significantly, no non-industrial firms are located there. Many Santa Clara firms are high-technology industries and have grown to current levels at or near their present locations, originally the site of their production facilities. However, they are now characterized by multi-plant production, including plants in foreign countries. They are involved in substantial inter-firm sales and purchases of intermediate products. Research and development activities play an important role in product innovation and improvement. It remains to be seen whether these large international Santa Clara firms will be able to attract a diversified group of specialist and support services to their locale, or whether the existing concentration of these services in San Francisco will encourage these corporate headquarters into relocating away from the suburbs.

6.5 REFERENCES

- (1) California Department of Finance, Population Research Unit, County Population Estimates for July 1, Sacramento, 1978.
- (2) California Employment Development Department, Annual Planning Information, Sacramento, 1979.
- (3) Fortune, "The 500 Largest Industrial Corporations," May 1979; "The Second 500 Industrial Corporations," June 1979; "The Largest Non-Industrial Corporations," July 1979.
- (4) Allan R. Pred, Major Job Providing Organizations and Systems of Cities, Washington, American Association of Geographers, 1974.
- (5) Regional Plan Association, The Office Industry: Patterns of Growth and Location, Cambridge, Mass., MIT Press, 1972.
- (6) U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population, Report PC(1)-D6, Washington, 1972.

CHAPTER 7

TOURISM

7.1 INTRODUCTION

The San Francisco Bay Area is known for its mild and agreeable weather, its natural scenic topography, and its cosmopolitan atmosphere. In addition to serving as a major regional center for financial, insurance, and governmental activities, the Bay Area also has universities of world reputation and an industrial mix that includes many innovative and rapidly expanding firms. This combination of attractions draws business and recreational visitors from all parts of the nation and the world. The industries that serve this wide spectrum of visitors are a substantial segment of the regional economy, and this importance is the basis for evaluating tourism as one of the region's major income generators.

7.2 DEFINITION OF TOURISM

Tourism is not an industry defined under the Standard Industrial Classification system. However, the significant contributions to the region's economic base through flow of income brought to the region by visitors warrants treating tourism as a key component of the economic base.

Users of recreational and entertainment facilities include many Bay Area residents as well as visitors from outside the region. Residents of suburban places within the region, for example, visit San Francisco's theaters, restaurants and museums. The regional framework, however, provides a more specific line of definition: a regional tourist is a visitor from outside the region who uses the region's resources, generates regional product, and contributes to regional income. Given the size of the region, it is virtually certain that such a visitor will stop overnight, or longer.

7.3 THE TOURIST INDUSTRY'S CONTRIBUTION TO THE REGIONAL ECONOMY

Tourist expenditures are focused in a fairly limited number of industries--hotels, motels, eating and drinking places, entertainment and recreation services and local transportation. But because both tourists and local residents generate demand in these industries, it is difficult to estimate the number of tourism-related jobs in the Bay Area. However, several indicators point to the importance of tourism to the Bay Area economy, notably the number of visitors to San Francisco, which increased from 1.56 million in 1970 to 3.21 million in 1978, for an annual growth rate of 9.4 percent.

The tourism industry's contribution to the region's economy distinguishes between gross sales of goods and services to visitors and regional value added attributable to visitor's expenditure. Value added accruing to the region is gross sales to visitors minus the cost of

materials from other regional industries and from outside the region. For example, visitors' purchases of goods imported to the region accrue partly to regional value added but mostly to the area from which the goods were supplied.

This focus on regional income and value added is especially relevant when estimating the multiplier effect of visitor's expenditures. Expenditure patterns of visitors to the region are quite similar to the input requirements of the personal service and business service industries. Thus, the income multipliers of these industries provide the best approximations for the tourism industry. Data from the input-output model developed by the University of California show multipliers of about 3.25 for these industries (4). These values suggest that a tourist dollar spent in the region generates \$2.25 in related regional income to make a total of about \$3.25 of direct and indirect regional expenditure per dollar of tourist spending.

Two factors account for the difficulties in measuring the economic effect of tourism. The first involves identifying the tourist. The tourist is not a homogeneous target that is easy to classify. Business executives and marketing personnel from other regions are among those counted. Then, conventioners and overnight visitors are certainly part of the tourist category. However, visitors to one part of the region from another regional location are technically excludable, although they are frequently counted. Internal visitors stay for a short time, thus their status as a visitors is in question as well as unmeasurable. Identifying and classifying visitors raises problems of measurement.

A second problem in evaluating the tourist industry is measuring the true economic impact of tourist expenditures. This involves a proper allocation of dollars spent into those that contribute to regional income and those that flow out of the region. The regional product associated with tourist spending is primarily composed of regional value added and therefore excludes purchases from other industries and from other regions. Detailed analysis of tourist expenditures are necessary to make this accounting allocation, an allocation that many businesses do not maintain in their internal records.

The estimation of regional tourist expenditures thus involves definitional and measurement problems. There are, however, statistical sources that provide a fairly comprehensive approach to the measurement of regional visitors, notably data on the hotel and motel room occupancy tax. This tax is levied by many cities or counties at a rate of six percent on invoices for room occupancy and the revenues generated are systematically published by the State Controller (1).

A minimum estimate of tourist activity can be made by evaluating hotel and motel occupancy. Table 7.3-1 presents the room occupancy tax receipts for Bay Area counties, and using established relationships, estimates the regional tourism contribution to the region's economic base. In 1976-77, tourism, as defined here, contributed over one and a quarter billion dollars to regional income. Almost two-thirds of the regional total was generated in San Francisco. Over ten percent was

TABLE 7.3-1

Estimates of Economic Impacts of Regional Tourist
Expenditures in the San Francisco Bay Area,
1976-77, by County

County	Room Occup. Tax Receipts 1976-77	Total Hotel/Motel Billing	Est. Tourist Expenditures	Est. Region Value Added	Direct, Indirect Reg. Income	Per- cent
(Thousands)						
Alameda	\$ 1,450.7	\$ 24,178.3	\$ 60,445.8	\$ 33,245.2	\$ 108,046.9	8.6
Contra Costa	321.0	5,350.0	13,375.0	7,356.2	23,907.6	1.9
Marin	310.2	5,170.0	12,925.0	7,108.8	23,103.6	1.8
Napa	165.3	2,755.0	6,887.5	3,788.1	12,311.3	1.0
San Francisco	10,587.2	176,453.3	441,133.2	242,623.3	788,525.7	62.8
San Mateo	1,527.7	25,461.7	63,654.2	35,009.8	113,781.8	9.0
Santa Clara	1,862.1	31,035.0	77,587.5	42,673.1	138,687.6	11.0
Solano	205.3	3,421.7	8,554.2	4,704.8	15,290.6	1.2
Sonoma	455.0	7,583.3	18,958.2	10,427.0	33,887.8	2.7
Bay Area	\$16,884.5	\$281,408.3	\$703,520.8	\$386,936.4	\$1,257,543.3	100.0

Source: California State Controller, Annual Report of Financial Transactions
Concerning Cities of California, Fiscal Year 1976-1977, Sacramento.

attributable to Santa Clara County, and almost ten percent was due to Alameda County tourist activities. Smaller proportions accrue from the remaining Bay Area counties.

Table 7.3-1 uses these sources as the basis for making a regional estimate of the regional economic impact of tourist expenditures. The method and assumptions are presented below.

1. Room occupancy tax receipts for fiscal year 1976-77 are tabulated for the Bay Area's nine counties;
2. Assuming the tax is six percent in all cities and counties, a total billing estimate is made;
3. Studies of visitors' expenditures show that approximately 40 percent is spent for hotel and motel accommodations. Thus, total visitor expenditures can be estimated.

7.4 INDUSTRIES DEPENDENT ON TOURISM

Expenditure patterns of tourists have been surveyed in San Francisco and San Jose (2,4). The general pattern of these expenditures appears to be stable and therefore permits generalization. The pattern of expenditures is presented in Table 7.4-1. Hotel and motel expenditures amount to approximately 40 percent of tourist expenditures; spending for foods and beverages averages about one-third of the expenditure package. Retail stores receive from six to 14 percent of the tourist dollar, with pleasure and vacation visitors accounting for the upper limit and business visitors at the lower end.

In San Francisco, sightseeing and entertainment receive ten percent of tourist outlay. A San Jose breakdown is not available for this item. The hotels, restaurants, theaters, and other direct recipients of tourist dollars spend their receipts for food supplies, advertising, transportation, and other costs of doing business. These constitute the indirect flows of funds that spread through the regional economy and are the basis for the multiplier effect that is generated by tourist expenditure.

The industries which are the major recipients of these indirectly circulating dollars include trade, real estate, printing and publishing, business services, transportation, communications, food processing and banking. Thus, in addition to providing a major source of regional income, tourism, through its indirect expenditure affects, contributes to the viability of a wide range of Bay Area industries.

TABLE 7.4-1

Percentage Distributions of Tourist Expenditures by Visitor's Category,
San Francisco (1977) and San Jose (1978-79)

Expenditure Category	San Francisco (1977)	San Jose (1978-79)		
	All Classes of Tourists	Business Visitors	Convention Visitors	Pleasure/ Vacation Visitors
Hotel/Motel	35.	39.	40.	37.
Eating/Drinking	28.	33.	34.	31.
Retail Stores	14.	6.	11.	14.
Transportation	7.
Sightseeing/ Entertainment	10.
Other	6.	22.	15.	18.
Total	100.	100.	100.	100.

Source: Dirk J. Wassenaar, Summary of San Jose Hotel/Motel Guests and Convention Attendants 1978-79 and San Francisco Convention and Visitors Bureau, 1977 Annual Report.

7.5 REFERENCES

- (1) California State Controller, Annual Report of Financial Transactions Concerning Cities of California, Fiscal Year 1976-1977, Sacramento.
- (2) San Francisco Convention and Visitors Bureau, 1977 Annual Report, San Francisco, 1978.
- (3) University of California, Cooperative Extension, Bay Area Input-Output Models, 1967 and 1974, Berkeley, 1978.
- (4) Wassenaar, Dirk J., Summary of San Jose Hotel/Motel Guests and Conventions Attendants 1978-79, San Jose, 1979.

CHAPTER 8

THE FOOD INDUSTRY

8.1 INTRODUCTION

Processing and manufacturing food is one of the largest manufacturing industry groups in the Bay Area's economic structure. The industry is heterogeneous. It includes a wide range of products, and each segment of the industry has an affinity for a particular location. The industry products supply important segments of retail and wholesale trade within the region and are exported to the nation and abroad. Further, there is an identifiable group of suppliers to the industry which is also part of the region's industrial base. Thus food processing, with its linkages forward to markets and backward to suppliers, is the center of a much larger set of economic activities than is apparent from looking at the industry in the narrow sense.

Figure 8.1-A provides an overview of these relationships, emphasizing the major components of these forward and backward linkages.

8.2 DEFINITION OF THE FOOD INDUSTRY

As a starting point, the statistical materials used in this chapter are represented by categories coded and defined according to the Standard Industrial Classification (SIC), which defines Food and Kindred Products (SIC 20) as follows:

"This major group includes establishments manufacturing or processing foods and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls"(3).

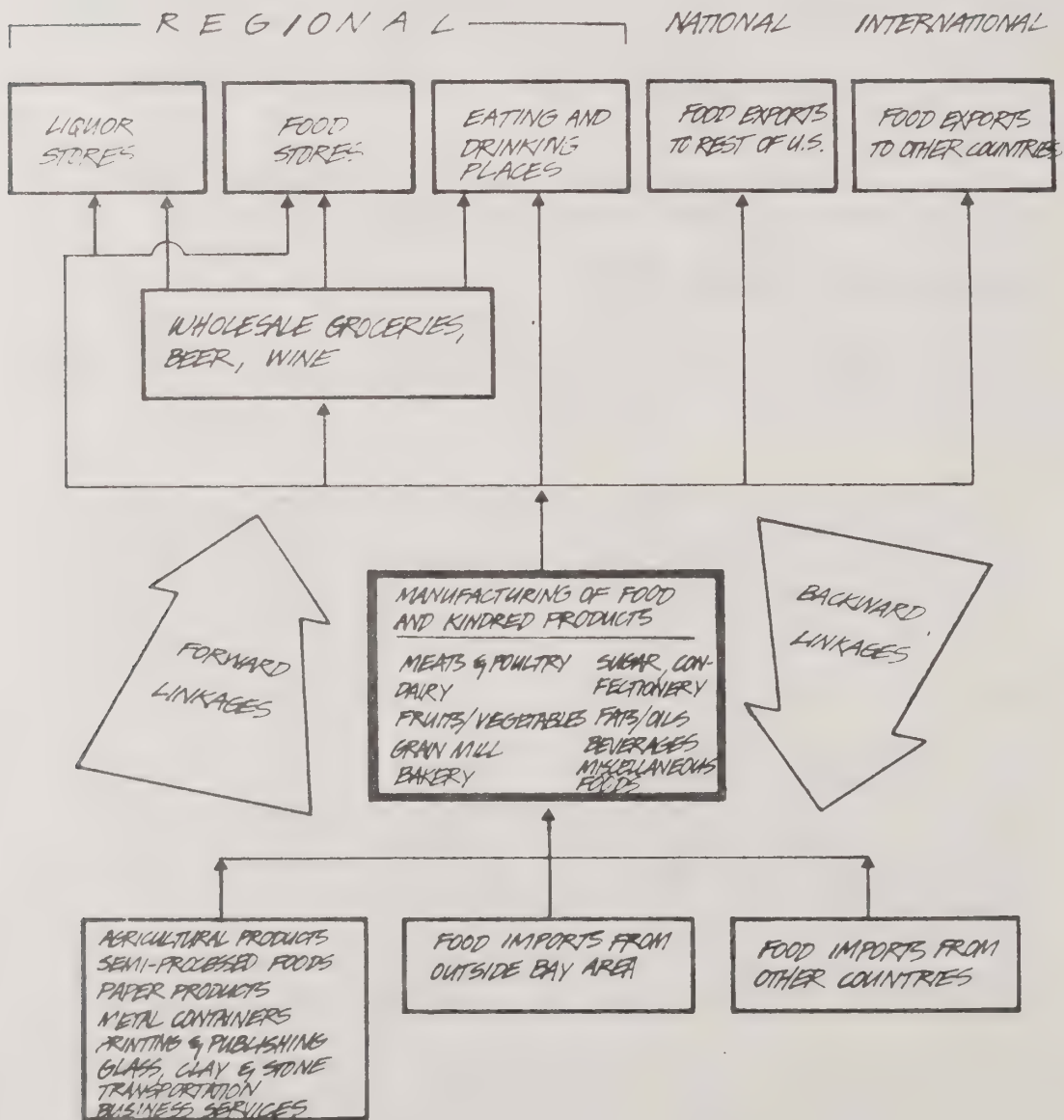
Included in this major group are:

- Meat Products (SIC 201)
- Dairy Products (SIC 202)
- Canned and Preserved Fruits and Vegetables (SIC 203)
- Grain Mill Products (SIC 204)
- Bakery Products (SIC 205)
- Sugar and Confectionery Products (SIC 206)
- Fats and Oils (SIC 207)
- Beverages (SIC 208)
- Miscellaneous Food Preparations and Kindred Products (SIC 209)

The forward-linked product-outlet industries can be divided into two broad categories: Wholesale Trade and Retail Trade. Many food products destined for retail outlets pass through the wholesale sector, which is itself divided into two categories: groceries and retail products (SIC 514) and Beer, Wine, and Distilled Alcoholic Beverages (SIC 518). The Wholesale Trade sector contributes a substantial amount of employment to the region's economic viability.

FIGURE 8.1-A

THE ECONOMIC SETTING OF THE FOOD INDUSTRY



The Retail Trade sector provides a significant market for food products within the region. This category includes Food Stores (SIC 54) and Liquor Stores (SIC 592) which make products available to the region's households, and the eating and drinking places (SIC 58) which not only serve households but also cater to visitors to the region.

Shipments of food products to the rest of the United States and to other nations constitute another group of forward-linked industries. Not only does this trade generate important income to the region but the large scale of operation also induces lower costs.

Among the backward-linked suppliers to the food industry, of primary importance are the agricultural producers of the meats, grains, oils, fruits, and vegetables, which are the industry's raw materials. Supplementing these are the suppliers of other food products necessary for processing, for example, sugar for fruit packers, chocolate for confectionary manufacturers, spices for meat packers, etc. Another major group of backward-linked industries supplies the food industry with product containers: cans, bottles and jars, paper bags, aluminum foil, plastic bags, etc. Finally, the industry uses the wide variety of business services available in the region: advertising agencies, lithograph and printing establishments, transportation facilities, legal, banking, and accounting services.

Data generated by the Bay Area Input-Output Model developed by the University of California's Cooperative Extension indicate that in 1974, gross sales for the regional food industry were \$3,035 million(7). Total sales were apportioned as follows:

TABLE 8.2-1
Food Processing Demand Markets: 1974

<u>Millions of dollars</u>	
Consumption by Households	\$1,443.3
Used in Capital Formation	2.8
Government purchases	23.6
Exports	1,084.5
Sales to other regional firms	479.8
Total Sales	\$3,035.0

Source: University of California Cooperative Extension, Bay Area Input-Output Models, 1967 and 1974, Berkeley, 1978.

Thus almost half of the food industry's output was consumed by the region's households, while about one-third of the output was exported. The data also illustrate the importance of food industry exports as a generator of income for the region, though it should be emphasized that a considerable proportion of the industry's raw materials are imported, largely in the form of agricultural goods from other sections of the state. Imports amount to \$1,165 million, more than offsetting the value of export shipments.

8.3 EMPLOYMENT LEVELS, GROWTH, AND DISTRIBUTION

Because of the industry's many products and shifting preferences for them in major markets, employment trends in the Bay Area and its constituent SMSAs have been varied. Since 1960, regional food industry employment has gradually declined as suburbanization has pushed and the expansion of agriculture in the Central Valley has pulled food processing plants out of the region to peripheral sites. The major decline has been in the San Francisco-Oakland SMSA where employment has decreased to 30,000 jobs from the 1960 level of 40,000. In the San Jose SMSA food industry employment expanded slightly from 1960 to 1970 but has contracted somewhat since then. Employment in the Santa Rosa SMSA remained relatively stable until 1977, and increased in 1977 and 1978. Vallejo-Fairfield-Napa food manufacturing has steadily increased since 1960. These trends are detailed in Table 8.3-1.

Table 8.3-2 shows employment for forward-linked industries in the food industry's economic chain. Growth in these industries more than offsets the slight decline in the food manufacturing industry itself. Data are presented for 1972 and 1976 to show the importance of these related industries and the direction of their employment trends.

The expansion of the wholesale and retail food sectors reflects growth of demand for the products of the region's food manufacturers. Although all of this demand is not met from within the region the healthy expansion of these markets provides stability for most of the food processing plants in the region.

Table 8.3-3 shows the distribution of food industry employment among the SMSAs, and substantiates the trends suggested in Table 8.3-2. Between 1972 and 1976, declines in fruit and vegetable canning were partially offset by increases in sugar, confectionary, and bakery products. The wholesale and retail sectors show growth in all SMSAs.

Although numerically small, the increases in food industry employment in Santa Rosa and Vallejo-Fairfield-Napa are significant in relative terms. Part of this growth reflects the strength of the beverage manufacturers in these SMSAs, based primarily on the rapid expansion of the malt liquors, wine and brandy processing. Employment expansion of this industry in Sonoma and Napa Counties has continued since 1976 and has been characterized by the creation of many new wine labels and new establishments.

TABLE 8.3-1

Employment in Food Processing in the Bay Area
and its SMSAs, selected years, 1960-1978

Year	Bay Area	SFO* (1,000's of Workers)	SJ*	SR*	VFN*
1960	55.5	39.2	12.5	1.9	1.9
1965	54.5	37.6	13.1	1.9	1.9
1970	53.9	34.2	14.1	2.0	2.6
1975	48.2	29.3	14.1	1.8	3.0
1976	48.6	29.5	14.0	2.1	3.0
1977	48.6	29.4	13.4	2.2	3.6
1978	49.1	29.6	13.0	2.7	3.8

Sources: California Employment Development Department
Wage and Salary Employment by Industry,
1972-1978, Part A, 1966-1974, Part B 1949-1965.

*SMSA designations: SFO - San Francisco-Oakland
SJ - San Jose
SR - Santa Rosa
VFN - Vallejo-Fairfield-Napa

TABLE 8.3-2

Bay Area Employment in Food Processing and in Food-Related Industry Groups in Wholesale and Retail Trade: 1972 and 1976

(thousands of workers)

Industries	1972	1976
TOTAL FOOD RELATED EMPLOYMENT	164.3	191.5
Food and Kindred Products	37.4*	36.5*
Meat	3.1	2.0
Dairy	2.3	2.3
Fruit and Vegetables	11.7	10.6
Grain Mill	.6	1.5
Bakery	5.9	7.0
Sugar and Confectionery	1.4	3.2
Fats and Oils	.5	1.0
Beverages	4.9	3.9
Misc. Food	4.2	4.3
Wholesale Trade	18.7	20.6
Groceries	15.2	16.9
Beer, Wine	3.5	3.8
Retail Trade	108.2	134.4
Food Stores	33.4	37.7
Eating and Drinking Places	71.2	92.2
Liquor Stores	3.6	4.4

Sources: U.S. Department of Commerce, Bureau of the Census, County Business Patterns, Washington, 1973, 1976.

*Totals are greater than sum of subgroups because of data suppression in source to avoid disclosure. County Business Patterns employment data is not directly comparable with Employment Development Department (EDD) data because of differences in coverage. Similar problems of comparability occur with Census of Manufactures employment data.

TABLE 8.3-3

Bay Area SMSA Employment in Food Processing and in Food-Related Industry Groups, in Wholesale and Retail Trade: 1972 and 1976

(thousands of workers)

Industries	1972				1976			
	SFO	SJ	SR	VFN	SFO	SJ	SR	VFN
TOTAL FOOD RELATED	113.4	36.9	6.3	7.6	128.1	45.2	8.8	9.2
Food and Kindred	23.6*	10.6*	1.3*	1.9*	22.4*	9.6*	2.1*	2.3*
Meat	2.2	.3	.3	.3	1.1	.4	.2	.3
Dairy	1.9	.4	-	-	1.8	.4	.1	-
Fruits & Veget.	3.9	6.4	.6	.8	3.5	5.9	.5	.8
Grain Mill	.6	-	-	-	.9	.2	.2	.2
Bakery	4.7	1.2	-	-	6.1	.9	.1	-
Sugar, Confect.	1.2	.2	-	-	3.4	.2	-	-
Fats and Oils	.5	-	-	-	1.0	.1	-	-
Beverages	2.9	1.1	.3	.6	1.7	1.1	.9	1.1
Misc. Food	3.5	.7	-	-	3.6	.5	.2	-
Wholesale Trade	15.4	2.2	.7	.3	16.3	3.3	.8	.2
Groceries	12.5	1.9	.7	.1	13.3	2.8	.7	.1
Beer, Wine	2.9	.4	-	.2	3.0	.5	.2	.1
Retail Trade	74.4	24.1	4.3	5.4	89.4	32.3	5.9	6.7
Food Stores	23.2	7.4	1.5	1.4	24.0	9.7	2.1	1.9
Eating & Drinking Places	48.7	15.9	2.8	3.9	62.5	21.5	3.7	4.5
Liquor Stores	2.5	.8	.1	.2	2.9	1.1	.2	.3

Source: U.S. Department of Commerce, Bureau of the Census, County Business Patterns, Washington, 1973, 1977

*Totals are greater than sum of subgroups because of data suppression in source to avoid disclosure.

Food retailers are for the most part distributed throughout the Bay Area in proportion to the population. Food wholesalers, on the other hand, tend to concentrate in the San Francisco-Oakland SMSA.

8.4 LOCATIONAL PATTERNS

Generally, the location of a food processing plant is determined by the weight loss to raw materials during the production process. If weight loss is large, then processing plants tend to locate near the source of materials; if weight loss is insignificant, then they tend to locate near the market. The products of the food manufacturing industry have different production weight losses, and some inferences regarding the locational preferences of the larger industry groupings can be made using this general rule.

Fruit and vegetable packing involves bulk reduction as well as weight loss. During pre-World War II years, canning plants moving into the Bay Area chose sites which were then close to the orchards and truck farms, but recent urbanization has displaced these sources of supply. As a result, some plants have been established outside the region, closer to the suppliers, and the dynamics of development will reinforce these tendencies.

Bakery manufacturing involves bulk gain with little weight loss. The main raw material, flour, has already undergone weight reduction with the milling of grain at the supply source. This, together with the perishability of the product, means that bakeries tend to locate near their markets. This suggests an expansion of bakery production and employment within the region as the population grows.

Sugar refining and confectionery products have divergent tendencies. Sugar refining involves substantial processing of sugar beets and cane, and the tendency is to locate in the vicinity of sources of supply. The sugar refining plant at Crockett is an exception, being located at a point intermediate between its specialized source of supply of sugar cane (Hawaii) and its national market.

Confectionery manufacture involves reprocessing, combining, and packaging of raw materials with little weight loss. Therefore, the consumer market is the focal point for plant location, and the confectionery industry will probably continue to find favorable locations in the region.

Beverages include soft drinks, malt liquors, and wine and brandy processing. Breweries and soft drink bottling plants involve combining of ingredients and enlargement of bulk with liquids. The tendency is to locate close to the market. In the case of breweries, the economies of large size plants producing a relatively uniform product tend to override the advantages of proximity to market. Freeway access allowing distribution to urbanized centers modifies the locational rule. Nevertheless the advantages of regional location for breweries and soft drink bottling plants suggest continuation and possible expansion of production within the region.

The situation with regard to wineries is different. Wine and brandy production involves significant weight loss from grapevine to bottle, and existing regional wineries in Napa, Sonoma, Alameda, and Santa Clara Counties illustrate the tendency for wineries to locate near the vines.

Miscellaneous food products comprise a food industry sub-group with small shares of regional employment, and for them locational generalizations are more difficult. However, the group includes coffee roasting which involves the import of heavy bulk green coffee beans by sea, primarily from South American sources. Roasting, grinding and canning processes preserve the bulk and weight of the coffee beans, and location at shipping points facilitates distribution to regional and national markets. Thus, this industry will continue to favor port locations.

8.5 OTHER INDUSTRY INDICATORS

The food industry has been discussed primarily in terms of employment, since this data is readily available. Limited information on cost and production relationships in the food manufacturing sector can also be found in the 1976 Annual Survey of Manufactures and the 1972 Census of Manufactures (6,5). This is shown in Table 8.5-1. However, trends from 1972 to 1976 are so influenced by missing prices and costs that real industry changes are obscured by the inflationary surge reflected in these data.

By the grossest measure of activity, Value of Shipments, the Bay Area food industry sold almost \$5.0 billion of product in 1976. Over 70 percent, \$3.4 billion, was transacted in the San Francisco-Oakland, SMSA, and the San Jose SMSA sold almost \$1.0 billion. However, these sales data include much duplication. For example, sales of sugar to fruit canners are counted twice, first as sugar sales and second in the value of shipments of canned fruit. Similar double counting occurs for spices and oils in salad dressing, flour in breads and cakes, and for other products where semi-processed food items are combined in a final product.

In order to measure the net economic contribution of the food industry to the region, this duplication may be eliminated by subtracting the cost of materials from the Value of Shipments (VS) to obtain the Value Added by Manufacture (VAM), a more accurate reflection of regional industry activity. Table 8.5-1 indicates that the cost of raw materials used in Bay Area food production constitutes different proportions of Value of Shipments in the four SMSAs. In 1976 the cost of materials amounted to more than \$3 billion, or 66 percent of the Value of Shipments figure. When the costs of materials are subtracted, the 1976 VAM in the Bay Area amounts to about \$1.6 billion, with San Francisco-Oakland accounting for \$1.13 billion, and San Jose accounting for \$360 million.

TABLE 8.5-1

Components of Value Added by Manufacture (VAM) in
Food Processing in the Bay Area and its SMSAs: 1972 and 1976

SMSA	Value of Shipments	Cost of Materials	Value Added	Payroll Costs	Production Worker Wages	Nonpayroll Costs
(millions of dollars)						
BAY AREA: 1976*	\$4,824.6	\$3,863.3	\$1,638.3	\$502.3	\$330.9	\$1,136.0
San Francisco-Oakland (SFO)	3,397.9	2,247.2	1,123.7	320.8	200.9	802.9
San Jose (SJ)	963.5	602.9	360.6	139.5	100.9	259.7
Santa Rosa (SR)	n.a.	-	-	-	-	-
Vallejo-Fairfield-Napa (VFN)	n.a.	-	-	-	-	-
BAY AREA: 1972	\$3,046.7	\$1,886.8	\$1,197.2	\$381.5	\$252.4	\$815.7
San Francisco-Oakland (SFO)	2,134.7	1,335.0	799.8	248.5	157.2	551.3
San Jose (SJ)	619.2	350.7	284.3	99.2	72.9	185.1
Santa Rosa (SR)	93.9	66.9	30.9	13.4	9.3	17.5
Vallejo-Fairfield-Napa (VFN)	198.9	134.2	82.2	20.4	13.0	61.8

Sources: 1976 data; U.S. Department of Commerce, Bureau of the Census, 1976 Annual Survey of Manufactures, Washington, 1977.

1972 data; U.S. Bureau of the Census, 1972 Census of Manufactures, Washington, 1974.

* 1976 Bay Area totals estimated on the basis of 1972 proportions of SFO plus SJ to regional totals.

It is significant how much VAM is attributable to overall labor costs. In the Bay Area in 1976, payroll costs accounted for 30.8 percent of VAM. After accounting for labor and materials, the remainder is non-payroll costs in VAM. Although a detailed breakdown of these costs is not available, they include returns to capital, rent, interest costs, and profit margins.

8.6. REFERENCES

- (1) California Employment Development Department Annual Planning Information, Sacramento, 1979.
- (2) _____, Wage and Salary Employees by Industry, Sacramento, various issues.
- (3) Executive Office of the President, Bureau of the Budget, Standard Industrial Classification Manual, Washington, 1972.
- (4) U.S. Department of Commerce, Bureau of the Census, County Business Patterns, Washington, 1973, 1977.
- (5) _____, 1976 Annual Survey of Manufactures, Washington, 1978.
- (6) _____, 1972 Census of Manufactures, Washington, 1974.
- (7) University of California Cooperative Extension, Bay Area Input-Output Models, 1967 and 1974, Berkeley, 1978.

CHAPTER 9

LONG-DISTANCE TRANSPORTATION

9.1 INTRODUCTION

Transportation by rail, truck, air and water is important to the Bay Area economy not only as an employment sector, but also as a vital support service providing mobility to both goods and people. Both port and rail facilities were important historical factors in the development of the regional economy.

Today, these transportation facilities provide essential services to nearly all of the major economic complexes of the Bay Area. Shipments of manufactured products, international trade, and business and tourist travel all rely on the strong linkages between the region and other places provided by the long-distance transportation networks. These networks continue to develop in capacity and complexity, contributing to the ongoing viability and expansion of a number of Bay Area industries.

The future of the transportation sector appears to be bright. The West Coast is a natural land-to-sea transfer point for shipments from the United States to the Far East, and the Bay Area has modern facilities and abundant capacity for future growth of long distance transportation. Many Far Eastern nations have become more economically developed in the last decade, and with increasing disposable income, their demand for United States products is likely to rise. On the other hand, the pattern of labor cost and other cost differentials between United States and Far East nations will probably stimulate two-way trade.

The recent population shift toward the Sunbelt and south and west of the nation are likely to benefit the region's long-distance transportation. In addition, the expansion of the Bay Area's market area due to technological improvements in transportation facilities and equipment is likely to enhance the industry's position in the economy. Future trade with China may well offer the Bay Area an opportunity to increase its trade share due to the concentration of overseas Chinese in the region, and their business and family connections.

9.2 DEFINITION OF THE LONG-DISTANCE TRANSPORTATION INDUSTRY

This chapter defines the long-distance transportation industry to include the following activities:

Railroad transportation (SIC 40). This group includes railroad establishments furnishing line-haul railroad and related services. In the Bay Area, railway services are provided by three companies. Commuter railway facilities are not included in this group.

Motor freight transportation and warehousing (SIC 42). Local or long-distance trucking, transfer, and storage of household and commercial goods activities are included in this group. This is the dominant mode of long-distance transportation in the Bay Area.

Water transportation (SIC 44). This industrial group consists of waterborne freight and passenger transportation and related services. The shipping of freight plays a major role in the Bay Area. There are six public ports and a number of private maritime facilities in the region.

Transportation by air (SIC 45). This group includes companies engaged in furnishing domestic and foreign transportation by air. There are three major airports in the Bay Area with half a dozen major air freight carriers. Air freight is growing in size and is of increasing importance for shipments of high value and urgency.

Pipeline transportation is excluded from this chapter, not because it is considered unimportant but rather because of the absence of available data for this group. Pipelines are primarily used to supply the oil refineries of the region, and employment in pipelines is relatively small.

9.3 EMPLOYMENT LEVELS AND DISTRIBUTION, AND INDUSTRY GROWTH

9.3.1 Employment Levels and Distribution

State of California employment payroll data indicate that the Bay Area employment in long distance transportation has been fairly constant at about 75,000 jobs over recent years (2). As shown in Table 9.3-1, slight decreases in both rail and water transportation employment have been offset by increases in trucking and air employment.

TABLE 9.3-1

Bay Area Employment in Long Distance Transportation 1972-1977

	1972	1977	Annual Percent Change 1972-77
Rail	11,000	8,300	-5.6
Truck	24,300	26,100	1.4
Water	12,899	11,102	-2.9
Air	28,721	29,217	0.3
Region	77,020	74,719	-0.60

Source: California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, 1979.

Three quarters of Bay Area long distance transportation workers were engaged in trucking and airborne activities in 1977. Trucking employment dominates the picture and was relatively dispersed, with one-fifth of the trucking employees in Santa Clara County. The locational trend of the trucking industry is toward the south Bay, although during the 1972-1977 period all areas increased in the trucking employment.

The remaining 25 percent of employment was roughly divided between rail and water employment, with most of these transportation activities being concentrated in the central counties. Due to the railway network and rail yard layout, only about 10 percent of the railroad employment was in north and south bay counties.

9.3.2 Industry Growth

Air Freight. Air cargo refers to the airlift of commodities of all types. The main concern in this study is the air freight. The Bay Area is served by three major airports: San Francisco and Oakland International Airports, and San Jose Airport with San Francisco Airport dominating the other two. Most regional headquarter and maintenance bases for the region's cargo forwarders and carriers are located near the San Francisco Airport.

Table 9.3-2 shows the tonnage shipped by air freight through the Bay Area's three major airports from 1965 to 1976.

Table 9.3-2

Bay Area Air Freight (Thousand of Tons)

	San Francisco	Percent of Region	Oakland	Percent of Region	San Jose	Percent of Region	Region
1965	173.9	98.3%	2.6	1.5%	0.5	0.2%	176.9
1970	316.2	96.5	8.8	2.7	2.7	0.8	327.8
1976	342.0	95.4	7.1	2.0	9.5	2.6	358.6

Source: Airport Records

There were large variations in the annual growth rate accompanied by a general slowing trend. San Francisco Airport dominated air freight shipments and showed a slight decline from 98.3 percent in 1965 to 95.4 percent in 1976.

The Bay Area's share of national domestic air freight traffic was consistently about 6 percent between 1960 and 1976 except for the 1965-1971 period when activities in Vietnam boosted the Bay Area's share into the 7 to 8.5 percent range. The amount of freight loaded consistently exceeded the amount unloaded, despite various incentives provided by carriers to balance the flows.

Quantitative data on air freight shipments by commodity and the locations of freight origins and destinations are not available from any single source. Estimates were based on information supplied by local freight forwarders, air carrier interviews, and San Francisco Customs District records. From these sources it was determined that a few commodities account for a high concentration of international air freight. Manufactured goods, machinery, and transportation equipment accounted for about 80 percent of total inbound and outbound shipments. In contrast, total domestic air freight is highly diversified, with electronics accounting for about one-fifth of the total tonnage.

Water Freight. As shown in Figure 9.3-A, the region is served by six public seaports. For reasons of data availability, Encinal Terminal is combined with Oakland Harbor in the discussion. The Port of San Francisco is one of the major general cargo ports in the Bay Area while the Port of Oakland is the largest containerport on the West Coast. The Port of Richmond is one of the busiest and most specialized import harbors in the Bay Area with nearly all of its shipments consisting of crude oil and petroleum imports.

International waterborne shipments handled by the Bay Area's major ports expanded by more than 75 percent between 1972 and 1977. In this period, import tonnage almost doubled, from about 10 million tons to 19 million tons (Table 9.3-3). The region's share of all West Coast waterborne cargo increased from 17 percent of total tonnage to over 21 percent in the same period. Due to the large increase in imported crude oil and petroleum products, the Port of Richmond's share of shipments doubled between 1972 and 1977. It ranked first in tonnage handled and accounted for almost half of the total tonnage handled in the region. Current plans to build a containerport in Richmond should lead to significant diversification of shipments.

The Port of San Francisco experienced a major decrease in imports, and shifted generally from an importing to an exporting port. Oakland has also become an export-dominated port, handling more than 53 percent of the region's 1977 export shipments. In terms of share of the total tonnage, the Port of Oakland has remained fairly constant.

The Port of Redwood City has played a limited and decreasing role in waterborne shipping. This harbor experienced decreases in both absolute and relative terms. Cargos shipped in the Carquinez Strait ports have increased in absolute terms while shares in both imports and exports have decreased.

Figure 9.3 -A

Publicly utilized seaports in the Bay Area

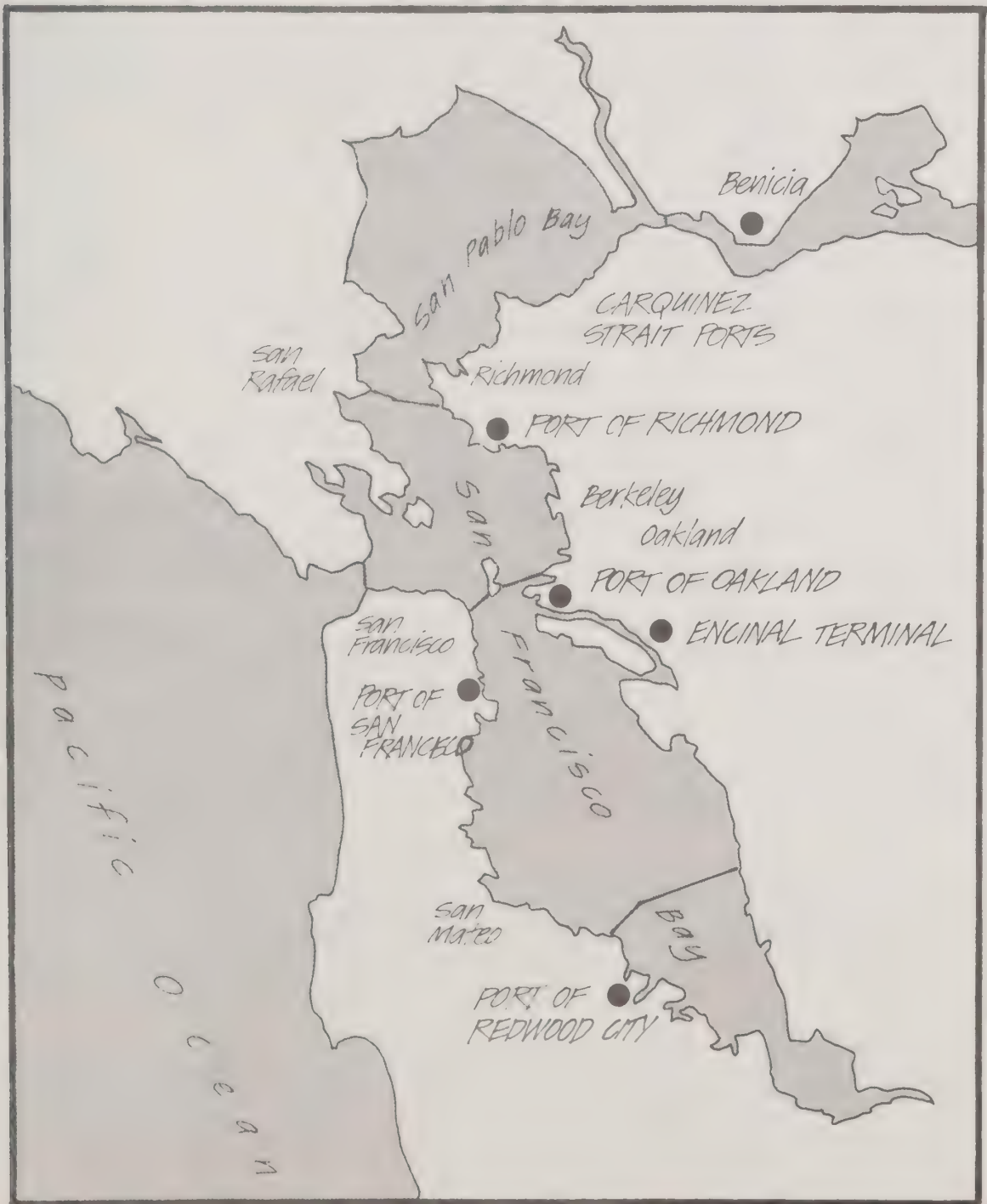


TABLE 9.3-3

Total Tons of Waterborne Shipments

<u>Harbor</u>	<u>1972</u>			<u>1977</u>		
	<u>Imports</u>	<u>Exports</u>	<u>Total</u>	<u>Imports</u>	<u>Exports</u>	<u>Total</u>
San Francisco Harbor	1,483,799 (14.9%)	649,634 (21.4%)	2,133,433 (16.4%)	660,379 (3.5%)	745,029 (20.0%)	1,405,408 (6.2%)
Oakland Harbor	1,198,123 (12.0%)	1,111,775 (36.6%)	2,309,898 (17.7%)	1,736,705 (9.1%)	1,991,419 (53.5%)	3,728,124 (16.3%)
Richmond Harbor	2,890,249 (28.9%)	455,222 (15.0%)	3,345,471 (25.7%)	10,738,170 (56.2%)	439,433 (11.8%)	11,177,603 (49.0%)
Redwood City Harbor	221,284 (2.2%)	420,241 (13.8%)	641,525 (4.9%)	15,294 (0.1%)	185,845 (5.0%)	201,139 (0.9%)
Carquinez Strait	4,193,784 (42.0%)	401,786 (13.2%)	4,595,570 (35.3%)	5,946,218 (31.1%)	357,871 (9.6%)	6,304,089 (27.6%)
Total	9,987,239 (100.0%)	3,038,658 (100.0%)	13,025,897 (100.0%)	19,096,766 (100.0%)	3,719,597 (100.0%)	22,816,363 (100.0%)

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the U.S., Calendar Years 1972 and 1977.

When petroleum imports are excluded, Oakland was the region's most important port for general cargo, handling 55 percent of shipments in 1977, followed by San Francisco (21 percent), Richmond (12 percent), Carquinez Strait (9 percent), and Redwood City (3 percent). Oakland grew the fastest of all Bay Area ports in shipment of general cargo, increasing its share from 36 to 55 percent of the Bay Area total over the 1972-1977 period. As shown in Table 9.3-4, the region as a whole, for general cargo, changed from a net import region in 1972 to a net export one in 1977.

Table 9.3-5 presents the six most important commodities handled in the Bay Area, excluding petroleum. In both imports and exports, these six most important commodities accounted for more than 40 percent of the total tonnage. The high concentration of commodities in Oakland, the dominant seaport, is underscored by the cumulative percent.

In terms of the variety of commodities shipped, the Bay Area seaports generally had high concentrations of few commodities, with less than five accounting for more than half of the 1972 tonnages for both imports and exports. Exports in the Port of San Francisco were an exception, with nine commodities accounting for more than 51 percent. In 1977, the Port of Oakland diversified its commodity type, and about a dozen commodities accounted for more than half the weight of its shipped tonnage.

The Ports of Richmond, Redwood City, and Carquinez Strait are very specialized ports. In 1972 and 1977 only one or two commodities accounted for more than half of the shipped commodity weight in both imports and exports in each of these three seaports.

Trucking and Railroad Freight. Trucking is the most common type of long distance transportation. In addition to its importance for inbound and outbound shipments, it serves as a feeder, connector, and distributor for shipments by other modes. Some of the nation's largest trucking carriers are headquartered in the Bay Area but there are also many one-truck operators and small proprietary fleets. Over the last twenty years, major truck terminals have been established primarily in the central and southern parts of the East Bay in the San Leandro-Hayward area. This location is convenient for intercepting inbound freight from the south and east to be distributed locally, and also for consolidating outbound freight.

The Bay Area has an extensive railroad network, provided by Southern Pacific, Western Pacific, and Santa Fe Railway companies, with good route connections to the eastern and southern regions of the United States. Southern Pacific handles the largest share. Incoming rail freight exceeds outgoing freight.

There have been modifications to existing rail yards to accommodate new patterns of shipment, but Bay Area rail yard locations have remained unchanged for many decades.

TABLE 9.3-4

Total Tons of Waterborne Shipments (Excluding Petroleum)

<u>Harbor</u>	<u>1972</u>			<u>1977</u>		
	<u>Imports</u>	<u>Exports</u>	<u>Total</u>	<u>Imports</u>	<u>Exports</u>	<u>Total</u>
San Francisco Harbor	1,076,439 (31.9%)	649,634 (21.6%)	1,726,073 (27.0%)	660,379 (21.7%)	745,029 (20.0%)	1,405,408 (20.8%)
Oakland Harbor	1,169,504 (34.6%)	1,110,710 (36.9%)	2,280,214 (35.7%)	1,736,705 (57.1%)	1,991,419 (53.5%)	3,728,124 (55.1%)
Richmond Harbor	435,767 (12.9%)	455,222 (15.1%)	890,989 (14.0%)	401,777 (13.0%)	439,433 (11.8%)	841,210 (12.4%)
Redwood City Harbor	221,284 (6.6%)	420,241 (14.0%)	641,525 (10.1%)	15,294 (0.5%)	185,845 (5.0%)	201,139 (2.8%)
Carquinez Strait	370,426 (14.0%)	844,484 (12.3%)	(13.2%)	227,881 (7.5%)	357,871 (9.6%)	585,752 (8.7%)
Total	3,377,052 (100.0%)	3,006,233 (100.0%)	6,383,285 (100.0%)	3,042,036 (100.0%)	3,719,597 (100.0%)	6,761,633 (100.0%)

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the U.S., Calendar Years 1972 and 1977.

TABLE 9.3-5

Six Most Important Traded Commodities of the Bay Area (Excluding Petroleum), 1977

IMPORT				EXPORT			
Commodities	Percent	Cumulative Percent	Dominating Harbor	Commodities	Percent	Cumulative Percent	Dominating Harbor
Iron and Steel Plates and Sheets	10.45	10.45	Oakland	Iron and Steel Scrap	11.91	11.91	Richmond Oakland
Motor Vehicles, Parts and Equipment	7.70	18.45	Carquinez	Coke, Petroleum Asphalts, Solvents	9.02	20.93	Carquinez
Standard Newsprint Paper	6.94	25.09	San Francisco	Cotton, Raw	7.11	28.04	Oakland
Vegetable Oils, All Grades; Margarine and Shortening	6.49	31.58	Richmond	Basic Chemicals and Products, Not Elsewhere Classified	5.59	33.63	Oakland
Prep. Fruits and Vegetable Juice	4.62	36.20	Oakland	Prep. Fruits and Vegetable Juice	4.13	37.76	Oakland
Iron, Steel Shapes, Including Sheet Piling	4.05	40.23	Oakland	Miscellaneous Food Products	3.30	41.06	Oakland

-75-

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the U.S., Calendar Year 1977.

The most recently available comprehensive statistics on shipments by trucking and railroad modes are for 1972. Trucking dominates all modes in Bay Area long distance transportation in terms of weight of shipment. Between 1967 and 1972, the share of tonnage transported by truck increased from 47 to 56 percent.

As shown in Table 9.3-6, the Bay Area's truck freight tonnage increased between 1967 and 1972 at an annual rate of 7.5 percent. This was more than double the state's truck freight growth rate, with the region's share of total California truck tonnage increasing from 25.5 to 30.8 percent. The major commodities shipped by truck were primary metal products, machinery, and stone, clay, glass and concrete products.

TABLE 9.3-6

Shipments by Truck and Rail (Millions of Tons)

	<u>1967</u>	<u>1972</u>	<u>Annual Percent Change</u>
<u>Truck</u>			
Region	12.53	17.96	7.4%
California	49.06	58.33	3.5%
Regional Share	25.54%	30.79%	
<u>Rail</u>			
Region	6.32	6.42	0.3%
California	24.78	21.44	-2.8%
Regional Share	25.50%	29.94%	

Source: U.S. Department of Commerce, Bureau of the Census, 1972 Census of Transportation, Commodity Transportation Survey, Area Report 7, Washington, 1975

The region's rail freight tonnage remained constant in the 1967-1972 period, while the state's tonnage showed a slight decline, from 25 to 22 million tons.

The Bay Area's share of total state rail tonnage increased from 25.5 to 30 percent in the five year period. Canned fruit and vegetables and paperboard products were the major commodities handled by rail.

9.4 INTERNATIONAL TRADE

The data available on international trade are limited. The following discussion of the San Francisco-Oakland Customs District includes ports outside the region (Sacramento, Stockton, Monterey Bay, etc.) in addition to the five Bay Area ports, and consider general cargo only and not petroleum (3).

Total exports from the San Francisco-Oakland Customs District for the year 1978 amounted to 6,591,300 short tons valued at more than \$4.3 billion. Foreign imports into the district in the same year amounted to 4,236,900 short tons with a value of more than \$4.7 billion. Excluding petroleum shipments, the Bay Area is a net exporting region in terms of shipment weight, but a net importing region in terms of dollar value (Table 9.4-1).

This inverse relationship can be explained by the types of commodity traded. In general, a large proportion of raw materials of low value per ton were exported. In 1978, about one-fifth of the total exports were textile fibers and fruit and vegetables. On the other hand, finished products of high value per unit weight were imported. For example, road vehicles accounted for about 22 percent of all 1978 imports.

The relationship between shipment weight and value can be most clearly understood in terms of dollars per pound of shipment. With few exceptions, the unit value of imports is generally higher than that of exports.

There was a high concentration among commodities of the total value of shipments handled by the San Francisco-Oakland Custom District. In exports, nine commodities among more than 100 commodity types accounted for more than half of the shipped value. Imports were even more concentrated with five commodities accounting for more than half of the total value of shipment.

International waterborne trade to Asian countries accounted for 77 percent of export and 71 percent of import dollar values. In tonnage, the corresponding proportions are 54 percent and 79 percent. Japan was the most important trading partner, accounting for about 35 percent of exports and 40 percent of imports. The region's role as a major gateway to the Asian countries is underscored by these statistics.

In 1978, Europe accounted for about 10 percent of exports and 1 percent of imports and the remaining trading volume was divided between Australia, the South Pacific, Africa, and the Americas.

TABLE 9.4-1

Trading Partners, San Francisco-Oakland Customs District
Waterborne Liner and Tramp Vessel Shipments, 1978

(Excluding Oil Tankers)

Country	Export				Import			
	Tons (1,000)	Percent	Millions of Dollars	Percent	Tons (1,000)	Percent	Millions of Dollars	Percent
Japan	2,730.0	41.42	1,503.3	34.64	1,315.6	31.05	1,879.5	39.42
Korea	772.9	11.73	428.2	9.87	212.9	5.02	359.5	7.54
Hong Kong	251.6	3.82	263.5	6.07	78.6	1.85	313.4	6.57
Taiwan	302.2	4.85	192.2	4.43	202.7	4.78	492.3	10.33
Other Asian	1,127.3	17.10	949.5	21.88	443.0	10.46	360.5	7.56
Europe	718.6	10.90	431.6	9.94	613.4	14.48	737.0	15.46
Australia & Oceania	194.0	2.94	398.7	9.19	114.2	2.70	125.6	2.63
Others	494.9	7.52	173.0	3.99	1,256.8	29.66	499.8	10.49
Total	6,591.3	100.00	4,340.0	100.00	4,236.9	100.00	4,767.8	100.00

Source: Port of Oakland, Foreign Trade, Oakland-San Francisco Customs District and U.S. West Coast, January-December, 1978.

9.5 TECHNOLOGICAL CHANGE

During the last 15 to 20 years, containerization of waterborne general cargo has been introduced into the Bay Area. Despite its capital intensive nature, it has been generally successful in handling large volumes of waterborne freight, permitting increased efficiencies and economies of scale. In particular, containerization allows fast intermodal shipments of a door-to-door (warehouse-to-warehouse) nature, expanding the hinterland of shipment, and reduces handling and shipment time, freight losses and damages due to weather or high seas, and requirements for product inventory and warehouse storage space.

Containerization of air cargo, on the other hand, has not created significantly large new markets for air freight. Fuel cost increases are likely to have substantial longer-term effects on the future of air freight, mainly because older and less fuel-efficient aircraft predominate in air freight services. New technology in aircraft may increase fuel efficiency and possibly reduce the negative environmental impact of noise and air pollution. However, airline management improvements in route selection, aircraft assignment and load factors will be as important as technological advances in the expansion of air freight markets.

9.6 REFERENCES

- (1) Association of Bay Area Governments and Metropolitan Transportation Commission, Aviation Forecasts for the San Francisco Bay Region, 1976-1996, Draft, Berkeley, 1977.
- (2) California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, 1979.
- (3) Port of Oakland, Foreign Trade, Oakland-San Francisco Customs District and U.S. West Coast, January-December 1978, Oakland, 1979.
- (4) U.S. Department of the Army, Corps of Engineers, Waterborne Commerce of the United States, Part 4, Vicksburg, Mississippi, 1973 and 1978.
- (5) U.S. Department of Commerce, Bureau of the Census, 1972 Census of Transportation, Commodity Transportation Survey, Area Report 7, Washington D.C., 1975

CHAPTER 10

THE PUBLIC SECTOR

10.1 INTRODUCTION

To portray the true economic impacts of the public sector, it would be necessary to construct a set of regional accounts to measure the costs of government and the quantity and value of public services. However, the construction of such a set of accounts is beyond the scope of this report and the available resources. Instead, employment data have been used as the basis for analysis.

10.2 DEFINITION OF THE PUBLIC SECTOR

The Standard Industrial Classification (SIC) codes applicable to public administration activities at any level of government -- federal, state, or local -- are:

Executive, Legislative, and General Government, except Finance (SIC 91)

Justice, Public Order, and Safety (SIC 92)

Public Finance, Taxation, and Monetary Policy (SIC 93)

Administration of Human Resources Programs (SIC 94)

Administration of Environmental Quality and Housing Programs (SIC 95)

Administration of Economic Programs (SIC 96)

National Security and International Affairs (SIC 97)

In addition, some public administration functions parallel functions sometimes performed by the private sector. These include establishments providing:

Health Services (SIC 80)

Educational Services (SIC 82)

Electric, Gas, and Sanitary Services (SIC 49)

Local and Interurban Passenger Transit (SIC 41)

U.S. Postal Service (SIC 43)

Finally, there is a set of minor governmental functions which supplement the major activities listed above. Examples are:

- General Merchandise Stores (SIC 53)
- Eating and Drinking Places (SIC 58)
- Amusement and Recreation Services (SIC 79)
- Heavy Construction Contractors (SIC 19)
- Transportation by Air (SIC 45)
- Real Estate (SIC 65)

This detailed list demonstrates the extent and variety of the activities of public sector establishments, especially those involving functions other than public administration. Provision of these services involves local levels of government more significantly than state or federal levels.

10.3 EMPLOYMENT LEVELS, GROWTH, AND DISTRIBUTION

Measured in terms of employment, the public sector is the largest division in the Bay Area. In 1978, it included 435,000 employees out of an employed work force of two and a quarter million, accounting for just under 20 percent. This major job providing institution does not fit economic stereotypes with regard to size or location, particularly when relative proportions of government employees are evaluated by location. Table 10.3-1 shows the 1978 proportions of government employees in each SMSA.

TABLE 10.3.1
Government Employment by SMSA: 1978

SMSA	1978 Wage and Salary Employment		
	All Workers (Thousands of Workers)	Government Employees	Percent Government
San Francisco-Oakland	1,485.4	296.1	19.9
San Jose	586.8	81.9	14.0
Santa Rosa	82.7	19.7	23.8
Vallejo-Fairfield-Napa	95.9	37.0	38.6
BAY AREA	2,250.8	434.7	19.3

Source: California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, 1979.

As the table shows, the highest proportions of government employees are located in the small, peripheral SMSAs, Santa Rosa and Vallejo-Fairfield-Napa. The San Francisco-Oakland SMSA, with the largest concentration of government workers, is proportionally only slightly above the region's average, which is lowered by the small percentage in the San Jose SMSA.

Table 10.3-2 shows the geographical distribution of government employment from 1960 to 1978. During that period, the Bay Area's government employment grew over 80 percent, compared with an approximate increase of 40 percent in regional population over the same time period. The increases in government employment were distributed variably among SMSAs. The highest relative increase, over 200 percent, was in the San Jose SMSA. Vallejo-Fairfield-Napa's government employment increase was relatively the lowest, 56 percent, slightly lower than San Francisco-Oakland at 63 percent. The latter increase was the largest in absolute terms, amounting to 115,000 new government employees.

The steady upward trend in government employment between 1960 and 1978 is not uniform at all levels (Table 10.3-3). The lowest increase was in the federal sector, although there was a peak in 1970 associated with federal civilian employment directed toward Vietnam military procurement.

City government, exclusive of non-administrative functions such as educational services, city-owned transit, and public utilities, grew 80 percent from 1960 to 1978, but was second to county government which increased 160 percent. It is not possible to isolate the growth trend of state government from available statistics, where it is combined with other local government and special district employment. Included in this category are the several non-governmental functions for which the public sector has become responsible, including transit, water service, refuse collection, housing, and even some construction activities. This catchall category grew 130 percent during the 1960-1978 period, reflecting the surge of educational services in response to the needs of students born in the 1950s boom.

Data showing the distribution of employment by function are available for June 1977, and are summarized by SMSA in Table 10.3-4. Educational Services was the largest of the public sector employment sources, accounting for almost 200,000 employees at the state and local levels. About one-fourth of government employees were actually engaged in Public Administration, 110,000 out of 448,000. Health services, primarily the operation of public hospitals by federal, state, and local agencies, employed 26,500 workers. The remainder of public employees were engaged in a variety of functions: postal delivery, geological and weather monitoring, space research, airport management, local transit, utility and water service, refuse collection, housing and real estate, and even some major construction activities.

TABLE 10.3-2

Government Employment by SMSA: 1960-1978 (Selected Years)

Year	Bay Area	San Francisco-Oakland	San Jose	Santa Rosa	Vallejo-Fairfield-Napa
(Thousands of Employees)					
1978	434.7	296.1	81.9	19.7	37.0
1975	412.0	287.7	72.5	17.4	34.4
1970	375.7	271.5	60.0	13.6	30.6
1965	299.4	221.2	43.4	9.2	25.6
1960	239.1	181.3	26.8	7.3	23.7

Source: California Employment Development Department, Wage and Salary Employment by Industry, Sacramento, 1979.

TABLE 10.3-3

Bay Area Public Sector Employment by Levels of Government:
1960-78, Selected Years

Year	LEVELS OF GOVERNMENT				
	All Levels	Federal	County	City	State and Other Local
(1000's of Workers)					
1978	434.7	90.6	41.7	58.5	243.9
1975	412.0	92.4	39.1	54.3	226.2
1970	375.7	105.8	30.3	46.3	193.3
1965	299.4	90.9	21.5	39.2	147.8
1960	239.1	84.8	16.1	32.5	105.7
Percent increase: 1960-78	81.8	6.8	159.0	80.0	130.7

Source: California Employment Development Department, Wage and Salary Employment by Industry Sacramento, 1979.

TABLE 10.3-4

Public Sector Employment in Specified SMSAs by
Selected Governmental Functions: June 1977

Function	Bay Area	SFO	SJ	SR	VFN
(1000's of Workers)					
Public Administration (SIC's 91-97)	110.6	94.3	9.9	2.4	4.0
Health Services (SIC 80)	26.5	16.6	2.7	3.5	3.7
Educational Services (SIC 82)	198.6	131.9	46.5	9.9	10.3
All Other Functions	112.6	67.2	24.0	4.1	17.3
Public Sector	448.3	310.0	83.1	20.0	35.2

Source: California Employment Development Department, California Employment and Payrolls, April-June 1977.

In 1977, approximately 70 percent of the region's public employees were in the San Francisco-Oakland SMSA. This concentration reflected the location of major federal and state agencies in San Francisco, and an even greater concentration of state educational institutions in the central locations of the Bay Area. Health services, offered by specialized federal and state hospitals in addition to local public facilities, were dispersed in a less centralized pattern. The varied character of other governmental functions do not lend themselves to distributional generalizations.

10.4 CONTRIBUTION TO THE ECONOMIC BASE

The contribution of government employment to the economic base can be assessed by identifying those federal and state activities that can be considered service "exporters". Because data are not allocated to the same level in each of the SMSAs, aggregation by governmental function is not exact. However, the proportions of basic government employment are shown in Table 10.3-5.

TABLE 10.3-5

Basic Government Employment by SMSA: 1977

SMSA	Total Government Employment	Basic Government Employment	Percent Basic
San Francisco- Oakland	310.0	107.5	34.7
San Jose	83.1	14.7	17.7
Santa Rosa	20.0	1.9	9.5
Vallejo-Fairfield- Napa	35.2	16.8	47.7
BAY AREA	448.7	140.9	31.4

Source: California Employment Development Department, California Employment and Payrolls, April-June 1977.

With three major federal installations in Solano County, the Mare Island Shipyard, Travis Air Force Base, and a Veterans Administration Hospital, the highest proportion of basic government employment in the region is in the Vallejo-Fairfield-Napa SMSA. Santa Rosa and San Jose SMSAs have mostly local-serving governmental functions, and San Francisco-Oakland, with a large quota of both federal and state functions, is close to the region's average proportion of basic government activities. In San Francisco, most of the federal basic functions are regional offices of the major federal departments: Internal Revenue Service, Social Security Administration, Environmental Protection Agency, Housing and Urban Development, Defense, Federal Reserve Bank, and Federal Home Loan Bank. Among the state basic functions are institutions of higher learning: University of California campuses in Berkeley and San Francisco, and State Universities in Hayward, San Francisco, San Jose, and Rohnert Park.

10.4 REFERENCES

- (1) California Employment Development Department, California Employment and Payrolls, Sacramento, April-June, 1977.
- (2) _____, Wage and Salary Employment by Industry, Sacramento, 1979.

CHAPTER 11

CHARACTERISTICS OF THE LABOR FORCE

11.1 INTRODUCTION

Among the inputs to the regional economy, size and characteristics of the labor force are of overriding importance. The compensation of workers is, in the aggregate, the largest cost component in the region's product, and worker expenditure of income is a major element in the region's purchasing power. The occupational mix of the labor force brings the quality of the skills available to bear upon the productive process. The industry mix of employment allows conclusions to be made about the nature of the region's economic base.

11.2 LABOR FORCE SIZE, GROWTH, AND DISTRIBUTION

11.2.1 Population Growth

Since the regional labor force is a component of the regional population, population trends offer a starting point for identifying the growth of the labor force in the Bay Area. Data for both are presented in Table 11.2-1, with United States and California comparisons. There are several significant relationships apparent from the data.

1. In broad terms, the labor force trends follow population trends but at differing rates of growth;
2. The labor force growth rates in the United States, California, and the Bay Area are higher than population growth, indicating an increasing labor force participation rate;
3. Growth rates in population and labor force were lower in the 1970-1975 period than in the 1960-1970 decade in the United States, California, and the Bay Area;
4. Bay Area growth rates in population and labor force fell behind the United States and California rates in the 1970-1975 period, slowing down considerably from the high rates of the 1960-1970 decade.

Population growth is a function of three factors: the birth rate, the mortality rate, and migration. Because mortality rates have changed only slightly, if at all, in the past two decades, their contributions to population growth are stable and predictable. Fluctuations in regional population are therefore due to changes in birth rates and migration. Both of these factors have varied considerably in the sixties and seventies.

TABLE 11.2-1

Population Levels, Labor Force Levels and Annual Rates of Growth;
United States, California and the Bay Area: 1960, 1970, 1975

	<u>Population (1000s)</u>			<u>Annual Growth Rate</u>		
	1960	1970	1975	1960- 70	1970- 75	1960- 75
United States	179.3	203.2	213.0	1.2	0.9	1.1
California	15.7	20.0	21.2	2.4	1.2	2.0
Bay Area	3.6	4.6	4.8	2.5	0.8	1.9

	<u>Labor Force (1000s)</u>			<u>Annual Growth Rate</u>		
	1960	1970	1975	1960- 70	1970- 75	1960- 75
United States	69.6	82.7	92.6	1.7	2.3	1.9
California	6.3	8.6	9.4	3.2	1.8	2.7
Bay Area	1.5	2.1	2.2	3.4	0.9	2.6

Source: U.S. Department of Commerce, Bureau of the Census,
City and County Data Book, 1977.

Birth rates, which reached their peak in 1957, have declined steadily since then. In the 1960s, the crude birth rate (births per 1,000 population) declined from 2.4 to 1.8. The decline continued at least until 1974, when it reached 1.4. This decline is also reflected in the more comprehensive measure of fertility, the period fertility rate, which approximates the average number of births per woman over her lifetime. In the Bay Area, this rate declined from 2.1 in 1970 to 1.5 in 1974, paralleling the decline in California and in the United States. Thus, an important contributing factor to the declining rate of growth in the region was the steep decrease in birth rates in the 1970s.

The declining birth rate was reinforced by a decrease in net migration which also contributed to the declining rate of regional population growth. In the decade 1960-1970, annual net migration to the Bay Area maintained a level above 50,000 persons for the first half of the decade but fell to a range of below 20,000 annually from 1969 to 1976. The importance of migration in regional growth can also be measured in relative terms. During the 1960s net migration accounted for 56 percent of the increase in population growth, while between 1970 and 1975 the migration percentage accounted for only 32 percent. These high rates of migration are due to several factors. One is the Bay Area climate, characterized by mild winters and cool summers. Another is the range of economic opportunities associated with employment growth and business formation which were especially pronounced in the 1960s. The decline in migration in the early 1970s can be partially explained by the deceleration of the rate of employment growth that marked those years.

More recently, the migration flow has been influenced by the decreasing supply of housing and its relatively high prices, both sale and rental. Even more immediate in its impact on migration is the spectrum of transportation and commuting problems, and the observable air pollution in some parts of the region.

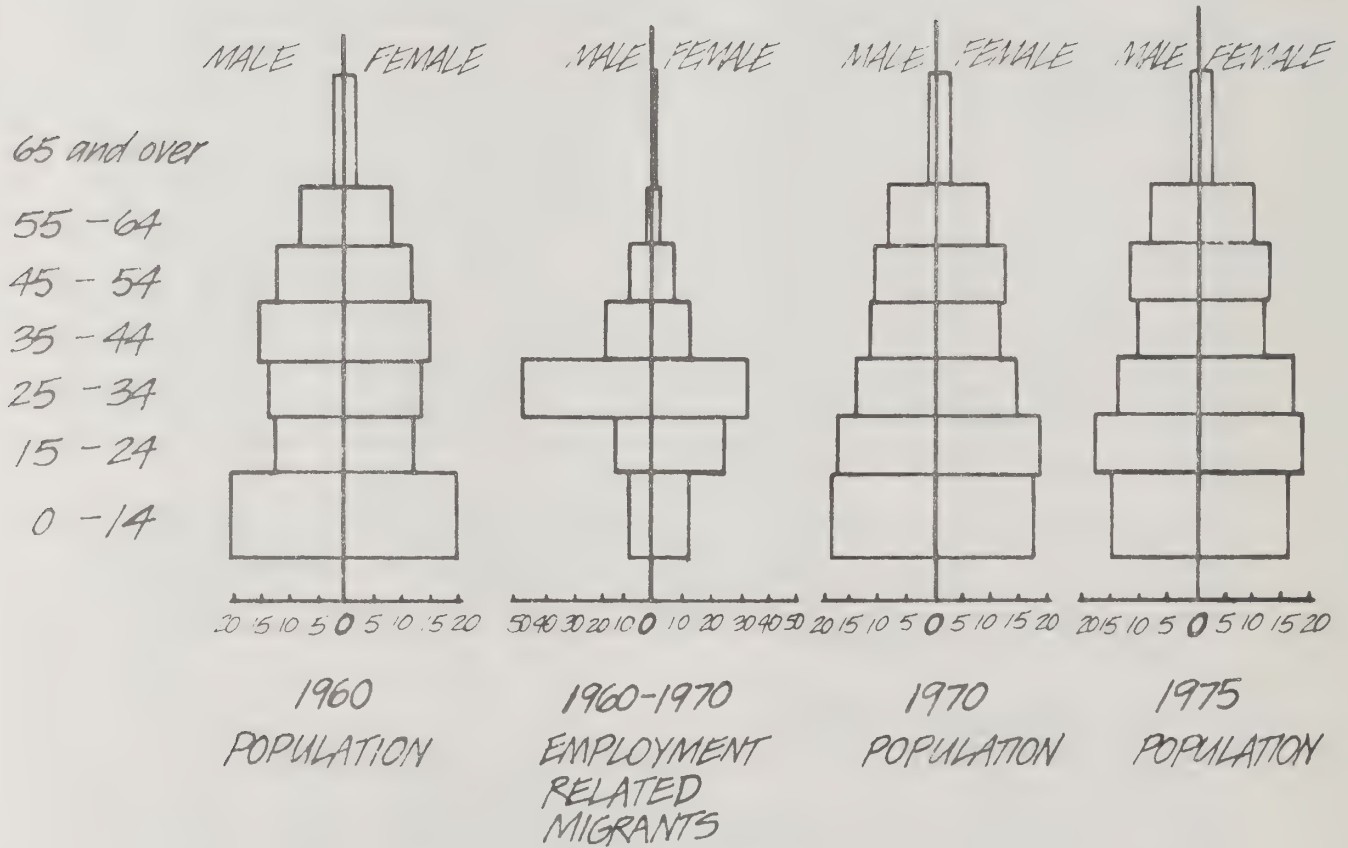
11.2.2. Age Structure Shifts

The composition of the population with regard to age level and sex is a contributing factor in population trends and labor force participation. Because migrants to the region are characteristically seeking jobs or seeking retirement, the age distribution of migrants has two significant effects. One concerns the high-participation working age range, which for males is primarily from 20 to 44, although a significant number of male in-migrants are in the 45-54 age group. For women, the high-participation working age range is primarily from 20 to 35. In these age groups, migrants are substantially over-represented compared with base year population distributions.

Figure 11.2-A shows age and sex data, together with the dynamics associated with population change through time. Comparing the 1975 population composition with preceding age-sex pyramids indicates that the proportion of population below 15 years of age was lower, reflecting the declining birth rate mentioned above. In addition, the age groups 35-44 (male and female) and 45-54 (male) had lower proportions than in 1960 or 1970.

Figure 11.2-A

Composition of the Bay Area population by age and sex: 1960, 1970, 1975



Sources:

U.S. Department of Commerce, Census of Population, 1960, Census of Population, 1970.

These data also show that the proportion of women 55-64 years of age, and especially 65 and over, is increasing, and that the imbalance between males and females is growing greater.

Figure 11-2.A also indicates that the proportions of the population in the active working age group (15-65) is changing. Although the length of life is increasing so that the proportion of persons 65 and over is larger, this is more than offset by the declining proportion of the population in the lower age groups. As a result, the population in the potential working sector of the population is larger in 1975 than in 1960. This is also the case if the age group 20-65 is considered to represent the working life population.

11.2.3 Racial and Ethnic Groups

The Bay Area labor supply includes significant proportions of racial and ethnic minorities. Overall, minority groups constitute about one-fifth of the labor force, which is estimated to be 4 percent black, and 8 and one-half percent other racial groups (Asians, Filipinos, Hawaiians, Eskimos), and 12 percent Spanish Americans, defined as persons of Spanish language or Spanish surname. Spanish Americans are thus the largest ethnic group in the region.

The proportions of racial-ethnic groups vary significantly in the four SMSAs of the region (Table 11.2-2). Blacks, with concentrations in the cities of San Francisco, Oakland, and Richmond, constitute 12.5 percent of the San Francisco-Oakland SMSA labor force. Their proportions in the other SMSAs are much lower, with Vallejo-Fairfield-Napa holding second rank. Spanish Americans predominate among minorities in San Jose, representing almost 15 percent of the labor force there, in San Francisco-Oakland they account for 11.5 percent, in Vallejo-Fairfield-Napa 9.5 percent, and Santa Rosa 6.5 percent.

11.2.4 Occupational Distribution

The occupational characteristics of the labor force reflect the unique mixture of industries in the Bay Area and the special skills that those industries use in their productive activities. The region has for many years been a center for corporate national and regional headquarters, as well as a regional center for federal agencies. As a result, the labor force is weighted towards white collar work, with the proportion of white collar workers increasing from 1970 to 1978 (Table 11.2-3). This increase reflects two important tendencies in the region: the increasing importance and size of the finance, insurance, and business services categories, and the phenomenal growth of high-technology industries. Unlike other manufacturing industries, the high-technology industries employ many workers in engineering, computer, data processing, scientific, administrative, and related occupations. As a result, the proportion of white collar workers approximates three quarters of the work force in these industries.

The expansion of these two categories in the 1970s has increased the demand for white collar workers in the region from an already high level of 58 percent of the work force in 1970 to 61 percent in 1978.

TABLE 11.2-2

Estimated Proportions of the Labor Force in Specified
Racial-Ethnic Groups, for the Bay Area and SMSAs: 1978

SMSA	1978 Labor Force (1000s)		Percentage of Total Labor Force			
			White	Black	Other	Spanish American*
San Francisco- Oakland	1,572.0	100.0	77.6	12.5	9.9	11.5
San Jose	661.0	100.0	90.0	2.9	7.1	14.7
Santa Rosa	119.3	100.0	96.0	1.2	2.8	6.5
Vallejo- Fairfield- Napa	120.5	100.0	88.9	6.9	4.2	9.5
BAY AREA	2,472.8	100.0	82.5	9.0	8.5	12.0

Source: Employment Development Department, Annual Planning Information, 1979-1980 for specified SMSAs.

* The Spanish-American population is defined as persons of Spanish language or Spanish surname. Spanish Americans are also counted in the racial categories as white, black, or other races.

TABLE 11.2-3

Proportions of White-collar and Blue-collar Workers by

Industry Divisions: 1970 and 1978

INDUSTRY DIVISION	WHITE-COLLAR WORKERS		BLUE-COLLAR WORKERS	
	1970	1978	1970	1978
Agriculture, Forestry, Fishing	15	18	85	82
Mining	50	35	50	65
Construction	29	31	71	69
Manufacturing	45	51	55	49
Transportation, Communication, Utilities	47	46	53	54
Wholesale and Retail Trade	61	62	39	38
Finance, Insurance and Real Estate	85	96	14	4
Services	65	69	35	31
Government	66	70	34	30
ALL INDUSTRIES	58	61	42	39

Sources: U.S. Department of Commerce, Bureau of the Census,
1970 Census of Population, Washington.

California Employment Development Department,
Annual Planning Information, Sacramento.

11.2.5 Industrial Distribution

The industries of the Bay Area transform the demand for their products and services into demand for labor via employment. The magnitudes of the industries' employment approximately represents the importance of their products and services in regional, national, and international marketplaces.

The major industrial components of the region's labor force are manufacturing, retail trade, services, and government. These four industry divisions account for 75 percent of the region's labor force and employ about 1.75 million workers.

The proportion of manufacturing industry employment has declined in the United States, California, and Bay Area economies over the last 25 years. This relative decline is due to a shift from goods to services as the economy has responded to higher family incomes, changes in consumer preferences, and increases in manufacturing productivity. Table 11.2-4 shows the extent of declines in the proportions of manufacturing employment.

TABLE 11.2-4

Manufacturing Employment

Geographical Unit	<u>Proportion of Employment in Manufacturing</u>			
	1960	1970	1975	1977
United States	31.1	27.4	23.8	23.8
California	26.9	22.4	20.3	20.1
Bay Area	22.6	18.5	18.2	18.3

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.

In contrast with the continuing decrease in the proportions of manufacturing employment in the United States and California, the Bay Area proportion has remained virtually stable since 1970. This reflects the sharp expansion of high-technology industries which has offset regional decreases in other manufacturing industries.

Generally, one of the major offsets to the trends in manufacturing has been growth in service industries. This is apparent in Table 11.2-5. For the United States as a whole, a decrease of about six percent in manufacturing has been offset by a five percent increase in services. In the Bay Area, the manufacturing decrease of less than four percent has been more than offset by a six percent increase in services employment.

TABLE 11.2-5
Services Employment

Geographical Unit	Proportion of Employment in Services			
	1960	1970	1975	1977
United States	13.6	16.4	18.2	18.7
California	14.5	18.3	20.1	20.4
Bay Area	14.5	17.3	20.2	20.9

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.

Significant differences in the proportions of employment in these industry groups are apparent in the several SMSAs of the region. In manufacturing, the San Jose SMSA had the highest proportion, 33.1 percent, reflecting the location of high-technology industries there. Retail trade had high proportions of employment in the outlying SMSAs. Santa Rosa with 19.2 percent and Vallejo-Fairfield-Napa with 17.2 percent, both had higher proportions of retail trade employment than the major SMSAs of San Francisco-Oakland and San Jose. The pattern for service employment showed San Francisco-Oakland and San Jose having 21.5 and 21.7 percent, respectively, compared with 18.3 and 16.9 percent, respectively, for Santa Rosa and Vallejo-Fairfield-Napa. The public sector, in relative terms, had high proportions of employment in Santa Rosa and Vallejo-Fairfield-Napa, 22.7 and 36.5 percent, respectively, while the lowest proportion of government workers was in San Jose.

These variations represent the unique locational requirements of the industries mentioned. In addition, access to their respective markets and service areas makes transportation and communication critical locational factors.

11.3 UNEMPLOYMENT IN THE BAY AREA

The balance and imbalance between regional labor force growth and the expansion of employment is reflected in the region's unemployment rate. Rates for recent years, compared with the state and nation, are detailed in Table 11.3-1.

TABLE 11.3-1
Unemployment Rates

Geographical Unit	<u>Unemployment Rate (Percent)</u>			
	1975	1976	1977	1978
United States	8.5	7.7	7.0	6.0
California	9.9	9.2	8.2	7.1
Bay Area	8.8	8.6	7.5	6.2

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.

In order to analyze the factors responsible for the steady decrease in recent unemployment rates, and to infer the ameliorative measures which would decrease the burden of unemployment on individuals and increase the aggregate productive performance of the Bay Area's economy, it is useful to examine the four major types of unemployment. These are cyclical, seasonal, frictional, and structural.

Cyclical unemployment reflects changes in rates of growth in the economy. In the expansion phase of the cycle, high rates of economic growth characterize all levels of the economy and are transmitted through the national economy to virtually all regions. As these national growth rates decelerate and even decline, they too are transmitted to the regional economies. These fluctuations characteristically occur in four- to eight-year cycles. Because they reflect nationwide forces, the amelioration of cyclical unemployment will only result from nationally focused programs and national economic policies.

Seasonal unemployment occurs because of forces associated with primarily natural annual cycles. The seasonal character of agricultural production generates seasonal fluctuations in food processing; the inclement winter weather interferes with a wide range of construction activities; the holiday season from Thanksgiving to Christmas generates a peak in retail sales employment.

Frictional unemployment occurs in the normal operation of labor markets as labor turnover takes place. This layer of unemployment acts as a lubricant to the effective operation of the labor market and benefits both employees and employers. As firms expand, they need a minimum and available pool of labor on which to draw. This pool is usually made up of employees wishing to enter the labor market or to change jobs. When unemployment is below 3 percent, frictional unemployment is the major component.

Structural unemployment reflects a mismatch between the skills of employees available in the labor market and those required to fill available jobs. Ameliorative measures involve training to acquire new skills and to upgrade present ones. Among the four types of unemployment, structural unemployment is the most responsive to ameliorative regional programs.

Some indication of the nature of structural unemployment is given in Table 11.3-2 which presents data available only for the San Francisco-Oakland SMSA.

TABLE 11.3-2

Unemployment by Age, Race and Sex, 1976
San Francisco-Oakland SMSA

Race Unit	Unemployment Rate: (Percent)			
	All Workers	Men 20 years and Over	Women 20 Years and Over	Both Sexes 6-19 years
Total Labor Force	10.3	8.7	9.9	22.8
White	9.3	7.4	9.3	24.4*
Black and Other	15.1	15.0	13.2	28.9*

* Estimates based on staff analysis

Source: U.S. Department of Labor, Geographic Profile of Employment and Unemployment, BLS Report 504, Washington, 1977.

Unemployment affects different ages, sexes, and racial groups differently. As the table shows, male workers have lower unemployment rates than female workers. In addition, white workers have lower rates than other races, and the impact on entry age workers is particularly high.

Although unemployment figures for the 16-19 age group are high, it is important to relate the rates to the labor force as a whole. The total number of unemployed youth constitute a small proportion of the labor force, about 20,000 out of 1,500,000, or less than 1.5 percent. This suggests that the amelioration of the problem of unemployment in this age group is possible through large-scale programs of placement and skill development.

Occupational differences in the unemployed labor force also indicate some of the impacts of structural unemployment. Data for 1976 show the differential impacts among occupational groups. As shown in Table 11.3-3, the rate of unemployment among operatives, laborers, and service workers was high in both the San Francisco-Oakland and San Jose SMSAs, and in the state. Lower rates characterized professional, managerial, and administrative workers in these areas. Since occupational unemployment figures are consistent by age, sex, and race, a surplus of skills in the categories showing high rates of unemployment may be indicated.

TABLE 11.3-3

Unemployment Rates by Occupational Group: San Francisco-
Oakland, San Jose SMSAs and California: 1976

OCCUPATIONAL GROUP	San Francisco-Oakland	San Jose	California
Professional, Technical	6.2%	4.0%	4.6%
Managers, Administrators	5.3	4.9	4.3
Sales Workers	7.3	4.3	5.3
Clerical Workers	6.5	6.9	7.4
Crafts	11.3	5.7	8.4
Operatives	16.1	11.6	14.8
Transport Operatives	11.5	7.2	8.6
Laborers	12.7	11.0	13.7
Service Workers	12.3	9.0	9.7
ALL WORKERS	6.3	5.2	5.6

Source: U.S. Department of Labor, Geographic Profile of Employment and Unemployment, BLS Report 504.

11.4 REFERENCES

- (1) California Employment Development Department, Annual Planning Information, 1979-1980, for specified SMSAs, Sacramento, May 1979.
- (2) Employment and Training Report of the President, Washington, 1978.
- (3) State of California, Economic Report of the Governor, 1978-1979, Sacramento, California, 1979.
- (4) State of California, Statistical Abstract, Sacramento, California, 1975.
- (5) U.S. Department of Commerce, Bureau of the Census, Census of Population, Washington, 1960.
- (6) _____, Census of Population, Washington, 1970.
- (7) _____, City and County Data Book, Washington, 1977.
- (8) U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Washington, various issues.
- (9) _____, Geographic Profile of Employment and Unemployment, BLS Report 504, Washington, 1977.

CHAPTER 12

PRODUCTIVITY IN BAY AREA MANUFACTURING INDUSTRIES

12.1 INTRODUCTION

Fortune magazine reports that:

"The upward trend in productivity has been slowing since the middle sixties. During the period 1947-65, the average rate of rise was 3.2 percent a year. For 1965-73, (the year of the oil shock), the average was 2.3. Then came a surprising and disturbing slide to 1 percent a year in 1973-78. And 1979 has been even worse, with an actual decline in output per worker-hour (1)."

Data to parallel these productivity trends at the regional level do not exist. However, the 1972 Census of Manufactures, and the corresponding 1976 Survey of Manufactures provide a limited data base for regional productivity estimation (2,3). The major deficiency is that since adequate regional price deflators are not available, it is not possible to relate productivity measures to the rate of inflation. Also, use of these sources limits analysis to the manufacturing sector of the economy and omits the substantial and growing service-oriented sectors.

12.2 DEFINITION OF PRODUCTIVITY

Productivity is a measure of the relationship between system inputs and outputs. There are two general types of productivity measures: (1) single-factor productivity measures that relate output to one input factor such as labor, capital, energy, or intermediate goods; and (2) total-factor productivity measures that relate output to some weighted aggregate of the inputs.

The ideal productivity measure can be defined as:

$$P = \frac{\text{Physical Output}}{\text{Real Inputs}}$$

This measure involves real product measures -- tons of steel, pairs of shoes, cases of tomatoes, etc. Inputs are also in real terms -- feet of factory floor space, hours of labor of specific types, kilowatts of electricity, etc. These units of output and input cannot be combined because of their diversity. Therefore, they have to be expressed in dollar terms.

The productivity measure (P^*) used in this section of the report will be:

$$p^* = \frac{\text{Value Added by Manufacture (VAM)}}{\text{Number of Employees (N)}}$$

Value added by manufacture (VAM) is the difference between the cost of the materials required for a product's manufacture and its sale price. It includes payroll costs, interest expenses, rent and leasing costs of buildings and machinery, profit margins, state and local taxes, contract costs for maintenance and repair, research, engineering and management consultants, advertising, telephone charges, insurance and similar expense items.

Although the use of VAM introduces several compromises into the concept of productivity, it has significant advantages over the use of sales or value of shipments figures, in that it eliminates duplications and the double counting which occurs when manufacturing processes involve several stages of production at separate plants. The production and sale of a loaf of bread can be used as an illustration:

TABLE 12.2-1

**An Illustration of the Value Added Concept:
Production and Sale of a Loaf of Bread**

Production Stage	Process	Value of Shipments	Value Added
Raw material	Wheat produced by farmer	.10	.10
Intermediate processing	Milling, shipping plus purchase from farmer	.18	.08
Wholesale assembly of materials	Flour and other bakery supplies assembled and sold	.23	.05
Manufacture	Bakery produces bread and sells to retail store	.40	.17
Final sale	Sale to consumer	.50	.10
Sum of Values		\$1.41	\$.50

If the value of shipments for each stage of bread production are added, the sum of these values exceeds the retail sales price, primarily because of material cost duplication. By subtracting the cost of materials from the value of shipments at each stage, the resulting value added figures total to the final retail price. Similarly, the sum of the value of shipments for the national and regional economies would include much duplication. The sum of the value added, on the other hand, is equal to the value of the final product. By using value added for each regional industry, it is possible to obtain an approximate measure of the economic importance of that industry in terms of the net contribution to the region's final products.

12.3 MANUFACTURING OUTPUT IN THE BAY AREA, CALIFORNIA AND THE UNITED STATES

The Bay Area's manufacturing industries are compared with those in California and in the United States in Table 12.3-1. Measured in terms of total employees in 1976, the Bay Area's share of the nation's manufacturing work force was 1.9 percent, while California's share was 8.5 percent. In terms of VAM, the Bay Area had a slightly higher share 2.2 percent, and the state was also higher at 9.1 percent. Thus, in the Bay Area 1.9 percent of the national work force generated 2.2 percent of the national value added.

Table 12.3-1 shows that in terms of total employment, manufacturing in the nation was slowly declining from 1972 to 1976. However, in California and the Bay Area manufacturing employment increased slightly during the same period. Of the employment increase in California, 40 percent occurred in the Bay Area, reflecting the expansion of the high-technology industries in the San Jose SMSA. The same general patterns also characterize production workers, with the United States as a whole showing a decline in employment, while employment growth in the Bay Area accounted for 40 percent of the state's gain.

Dollar comparisons between 1972 and 1976 shown in Table 12.3-1 are complicated by changes in output quantities, in wholesale prices, in manufacturing wage and salary rates, and by the rate of inflation and its differential impacts on various parts of the economy. However, from these data a set of performance indicators was calculated, which is presented in comparative form in Table 12.3-2. Although performance indicators are given for the Bay Area and both the state and the nation, comparisons with the national averages are considered more important than with the state's. Bay Area data are included in both the state and national measurements, but the regional data amount to less than two percent of the national aggregates and to over 20 percent of the state totals. Therefore, they have little effect on the United States' measurements, but could significantly affect the state's statistics.

In 1976 and 1972, the Bay Area was higher than the state or nation in all calculated indices. Thus, output per worker was higher, but so was the cost of labor. However, because the differences in output (VAM) per employee exceed the differences in labor costs, these comparisons do indicate that other factors of production also received a portion of the excess VAM.

TABLE 12.3-1

**Key Variables in Manufacturing Industries;
United States, California, and the Bay Area: 1976 and 1972**

Key Variable	1976			1972		
	U.S.	California	Bay Area	U.S.	California	Bay Area
Total Employees:						
Number (1,000's)	18,753.0	1,600.1	352.5	19,026.8	1,544.3	330.4
Payroll (million \$)	\$ 233,388.7	\$ 21,214.7	\$ 5,252.4	\$174,186.7	\$15,448.0	\$ 3,643.6
Production Workers:						
Number (1,000's)	13,052.0	1,041.3	200.1	13,526.5	1,021.0	191.8
Wages (million \$)	\$ 137,565.4	\$ 11,202.3	\$ 2,396.6	\$105,494.7	\$ 8,438.0	\$ 1,736.0
Value Added by Manufacture (million \$)	\$ 511,471.1	\$ 46,297.4	\$11,053.3	\$353,973.4	\$31,262.9	\$ 7,016.4
Cost of Materials (million \$)	\$ 681,194.1	\$ 56,155.6	\$14,921.6	\$402,493.5	\$32,611.5	\$ 7,919.8
Value of Shipments (million \$)	\$1,185,695.3	\$102,041.0	\$25,862.1	\$756,466.9	\$62,976.2	\$14,804.3

Sources: U.S. Department of Commerce, Bureau of the Census, 1976 Survey of Manufactures and 1972 Census of Manufactures, Washington.

TABLE 12.3-2

Performance Indicators for the Manufacturing Sector;
United States, California, and the Bay Area: 1976 and 1972

Performance Index	1976			1972		
	U.S.	California	Bay Area	U.S.	California	Bay Area
<u>VAM per employee</u>						
All employees	\$27,174	\$28,934	\$31,357	\$18,600	\$20,240	\$21,240
Production workers	39,187	44,461	55,239	26,170	30,620	36,580
<u>Proportion labor costs to VAM</u>						
All employees	0.46	0.46	0.48	0.49	0.49	0.52
Production workers	0.27	0.24	0.22	0.30	0.27	0.25
<u>Annual Payroll costs per employee</u>						
All employees	\$12,445	\$13,258	\$14,900	\$ 9,150	\$10,000	\$11,030
Production workers	10,540	10,758	11,977	7,800	8,260	9,050
Non-production Workers	16,808	17,918	18,739	12,490	13,400	13,760

Sources: U.S. Department of Commerce, Bureau of the Census, 1976 Survey of Manufactures and 1972 Census of Manufactures, Washington.

For all employees, the ratio of labor costs to VAM is higher in the Bay Area than in California or the United States. However, comparing 1976 with 1972, the ratio has declined in the nation, state, and region, indicating that VAM (which reflects wholesale price changes) went up faster than labor costs (which include wage and salary rates). This is also the case for production workers, though also significant is the fact that the ratio of production worker labor costs to VAM is lower for the Bay Area than for either the state or the nation. Low ratios signify that nonlabor shares of VAM (allocations to rent, interest, profit margins, and other business costs) are high.

Annual payroll levels for production and non-production workers also show significant differences. For the United States, annual payroll levels from 1972 to 1976 increased 35 percent for both production and non-production workers. In the Bay Area, the increases for the period were unevenly distributed, with production workers' wages increasing 32 percent compared with 36 percent for non-production workers.

12.4 VAM PER EMPLOYEE FOR THE BAY AREA AND THE UNITED STATES

Because the 1976 Survey of Manufactures is based on sample data, fine disaggregation is not reliable and therefore is not published. As a consequence, data are not provided for Santa Rosa and Vallejo-Fairfield-Napa SMSAs, and in San Francisco-Oakland and San Jose SMSAs, only industries of substantial size are reported. This leaves major gaps in the 1976 Bay Area comparisons with the state and the nation. Therefore, the analysis that follows relies on the 1972 Census data. Significant changes have taken place since 1972 and even since 1976, that affect the relationships presented here. These include the spectacular growth of the high-technology industries in the San Jose SMSA and the inflation that has had different effects on different parts of the region's economy. Nevertheless, there has been some continuity, and the 1972 relationships provide some useful insights into the region's productive apparatus.

Value added per employee and per production worker for 20 manufacturing industry groups in 1972 are presented in Table 12.4-1, permitting detailed comparisons and evaluation of differences between the Bay Area and the United States.

The paper, primary metals, instruments, and miscellaneous products industry groups had lower VAM per employee in the Bay Area than in the United States. For the remaining fifteen groups VAM per employee was higher in the region than in the United States. The industry groups with the highest values in the Bay Area (chemicals, petroleum) also had high values nationwide. The next values (transportation equipment and food) had larger differentials over United States values. The industry groups with the lowest regional VAM per employee were apparel, textile mill products, leather, and miscellaneous products. Apparel was the only group of any significant size in the region; the others had very small employment and VAM. These are primarily low wage and low VAM per employee industries where national and international suppliers have competitive advantages.

TABLE 12.4-1

Value Added By Manufacture Per Employee and Per Production Worker
By Industry Group
For the United States, California, And The Bay Area: 1972

INDUSTRY GROUP (Products)	SIC CODE	ALL EMPLOYEES			PRODUCTION WORKERS		
		UNITED STATES	CALIFORNIA	BAY AREA	UNITED STATES	CALIFORNIA	BAY AREA
TOTAL		\$18,600	\$20,240	\$21,240	\$26,170	\$30,620	\$36,580
Food	20	22,690	25,950	28,920	32,820	36,040	39,380
Tobacco	21	39,780	---	---	45,940	---	---
Textile Mill	22	12,300	18,980	13,430	14,010	23,880	18,800
Apparel	23	9,860	10,810	10,770	11,260	12,570	12,440
Lumber and Wood	24	14,920	18,130	16,640	17,150	20,880	19,550
Furniture and Fixtures	25	13,200	14,440	15,870	15,870	17,570	20,720
Paper and Allied	26	20,630	20,930	20,280	26,190	26,890	25,940
Printing and Publishing	27	19,130	19,400	21,130	31,700	31,670	34,410
Chemical and Allied	28	38,750	38,180	39,770	61,740	65,620	67,040
Petroleum and Coal	29	41,530	43,490	42,890	59,170	65,230	61,430
Rubber and Plastic	30	18,870	18,550	20,130	23,940	24,120	29,020
Leather	31	10,670	---	14,120	12,130	---	16,140
Stone, Clay, Glass	32	20,200	22,410	23,680	25,255	29,050	31,130
Primary Metals	33	20,350	17,180	16,160	25,210	22,150	19,800
Fabricated Metals	34	18,040	18,880	20,950	23,470	25,010	28,950
Machinery, Except Electrical	35	20,550	19,940	20,800	29,650	32,970	40,340
Electrical Equipment	36	18,410	18,720	19,500	29,360	30,770	34,260
Transportation Equip.	37	23,150	24,950	28,230	31,940	41,040	55,140
Instruments	38	23,350	19,280	20,270	36,310	31,760	41,590
Misc. Manufacturing	39	15,190	16,120	14,940	19,340	21,770	19,370
Administrative & Auxiliary	--	---	---	---	---	---	---

Source: U.S. Department of Commerce, Bureau of the Census,
1972 Census of Manufactures, Washington.

To find out whether the Bay Area's VAM per employee and per production worker was higher than that for the United States because the region's industry mix contained higher proportions of high VAM industries, regional VAM per employee and per production worker were calculated using the national industry mix with regional industry values.

TABLE 12.4-2
Value Added Assuming Different
Industry Mixes, 1972

	VAM Per Employee	VAM Per Production Worker
<u>Bay Area Averages</u>		
Regional industry mix	\$21,240	\$36,580
National industry mix	21,160	31,980
<u>U.S. Averages</u>		
National industry mix	18,600	26,170

Sources: U.S. Department of Commerce, Bureau of the Census, Census of Manufactures, 1972, Washington.

As Table 12.4-2 shows, the adjustment for industry mix made little difference to Bay Area VAM per employee, and regional mix productivity advantages over the United States were maintained. However, the U.S. industry mix of production workers applied to the region's VAM per production worker reduced the average VAM by almost \$4,000, and narrowed the differential between the Bay Area and the United States averages to about \$6,000. This indicates that high productivity industries were over-represented in the region, largely accounting for the region's comparative advantage. However, even after correcting for this over-representation, the region still has a significant advantage.

12.5 LABOR COSTS IN THE BAY AREA AND THE UNITED STATES

The same comparisons can be made for labor costs per employee and per production worker as have been made for VAM. Table 12.5-1 shows the industry group comparisons. Annual earnings in Bay Area manufacturing industries are higher in all industry groups than the United States averages except administrative and auxiliary employees, where the United States average exceeds that of the Bay Area.

TABLE 12.5-1
Average Annual Payroll Costs Per Employee And Per Production Worker
By Industry Group
FOR THE UNITED STATES, CALIFORNIA, AND THE BAY AREA: 1972

INDUSTRY GROUP (Products)	SIC CODE	ALL EMPLOYEES			PRODUCTION WORKERS		
		UNITED STATES	CALIFORNIA	BAY AREA	UNITED STATES	CALIFORNIA	BAY AREA
TOTAL		\$ 9,150	\$10,000	\$11,030	\$ 7,800	\$ 8,260	\$ 9,060
Food	20	8,230	8,780	9,210	7,380	7,320	8,300
Tobacco	21	7,570	---	---	6,980	---	---
Textile Mill	22	6,350	7,320	6,710	5,750	6,430	7,000
Apparel	23	5,270	5,500	5,550	4,560	4,630	4,740
Lumber and Wood	24	7,220	8,670	8,620	6,550	8,080	7,700
Furniture and Fixtures	25	6,940	7,590	8,740	6,050	6,640	7,780
Paper and Allied	26	9,460	9,890	10,360	8,660	9,180	9,820
Printing and Publishing	27	9,310	9,490	10,560	8,570	8,740	9,680
Chemical and Allied	28	10,440	10,080	10,810	9,060	8,520	9,490
Petroleum and Coal	29	11,740	12,270	12,790	10,870	11,470	11,590
Rubber and Plastic	30	8,360	8,360	9,480	7,410	7,250	8,000
Leather	31	5,810	---	8,250	5,120	---	7,570
Stone, Clay, Glass	32	8,900	9,670	10,700	8,200	8,970	10,240
Primary Metals	33	10,650	9,890	11,140	9,970	9,180	10,310
Fabricated Metals	34	9,260	9,500	10,770	8,310	8,400	9,980
Machinery, Except Electrical	35	10,130	10,540	11,670	8,970	8,590	9,370
Electrical Equipment	36	9,140	10,470	11,040	7,600	8,150	8,420
Transportation Equip.	37	11,560	12,710	13,600	10,310	10,250	11,030
Instruments	38	9,460	10,060	11,470	7,660	7,920	8,860
Misc. Manufacturing	39	7,140	7,520	7,740	5,960	6,100	6,190
Administrative & Auxiliary	--	13,850	12,930	13,360	---	---	---

Source: U.S. Department of Commerce, Bureau of the Census,
1972 Census of Manufactures, Washington.

The effect of industry mix on regional payroll averages was calculated in the same way for VAM, using the national industry weights. The results of this adjustment are shown in Table 12.5-2:

TABLE 12.5-2

Labor Costs Assuming Different Industry Mixes: 1972

	Annual Payroll Costs Per Employee	Annual Wages Per Production Worker
<u>Bay Area Averages</u>		
Regional industry mix	\$11,030	\$ 9,050
Regional industry mix omitting administrative and auxiliary workers	10,810	N.A.
National industry mix omitting administrative and auxiliary workers	10,100	8,660
<u>U.S. Averages</u>		
National industry mix	9,150	7,800
National industry mix omitting administrative and auxiliary workers	8,900	N.A.

Source: U.S. Department of Commerce, Bureau of the Census, 1972
Census of Manufactures, Washington.

Administrative and Auxiliary workers (A&A) are classified into a separate residual category in the payroll and wage data in the 1972 Census of Manufactures. Since this group is not associated with a specific industry or VAM, for comparisons where adjustment for industry mix is used, these workers have to be omitted. Production workers, by definition, do not include A&A workers and therefore their average annual wages do not need this adjustment.

Comparing Bay Area and United States annual payroll cost figures for all employees, regional costs are about \$2,000 above those for the nation. When adjusted for A&A and for industry mix, this differential is cut to \$1,200. Annual average wages for production worker show a differential of \$1,250, which decreases to about \$900 when adjusted for industry mix.

12.6 PRODUCTIVITY COMPARISONS FOR THE BAY AREA AND THE UNITED STATES

As shown in table 12.6-1, for the manufacturing sector, the Bay Area's VAM per worker exceeded that of the United States by over \$2,500, while the region's labor costs per worker exceeded the nation's by \$1,200. It is assumed that all VAM is directly attributable to production workers and constitutes the measurable contribution to overhead charges out of which non-production workers and all other expenses must be paid. When non-production workers are omitted from the analysis, the Bay Area's VAM per production worker exceeded that of the nation by \$5,810 while its labor costs exceeded the nation's by \$860.

TABLE 12.6-1

Comparisons of Bay Area and U.S. Output and Labor Costs, 1972

	All Employees	Production Workers
<u>Average Output per Worker</u>		
Bay Area	21,160*	31,980*
U.S.	18,600	26,170
Excess: Bay Area comparative advantage over the U.S.	\$ 2,560	\$ 5,810
<u>Average Labor Costs per Worker</u>		
Bay Area	10,100*	8,660*
U.S.	8,900	7,800
Excess: Bay Area comparative advantage over the U.S.	1,200	860

*Adjusted to industry mix of manufacturing sector in the United States economy.

Source: U.S. Department of Commerce, Bureau of the Census, 1972 Census of Manufactures, Washington.

12.7 REFERENCES

- (1) Fortune Magazine, October 8, 1979, p.85.
- (2) U.S. Department of Commerce, Bureau of the Census, 1972 Census of Manufactures Washington, 1972.
- (3) _____, 1976 Survey of Manufactures, Washington.

CHAPTER 13

LAND DEVELOPMENT PATTERNS

13.1 REGIONAL DEVELOPMENT TRENDS

The supply and location of developable land is significant to the region's economy for a variety of reasons. The availability of sites for commercial and industrial activities can be a key factor in public and private sector decisions concerning economic expansion. However, commercial and industrial sites must also be balanced by a supply of residential sites to house an expanding labor force. Location of new housing near work sites is an increasingly important factor in both public sector decisions on transportation needs and private sector decisions on locations for commerce and industry.

It is difficult to assess the availability and capacity of the region's vacant land. Its market availability can only be assumed. Its capacity for development, though generally determined by local government plans, varies greatly due to specific local conditions that only surface at the time of its development. General information is available from studies conducted by various regional agencies over the years. AGAQ conducted a regionwide survey of local land development policies in 1976, but even this information is being rapidly outdated by events since that time. The effect of the energy crisis on individual location decisions can be expected to be very significant. Local government's view of the fiscal impacts of land development have been altered by the Proposition 13 tax limitation. The 1979 initiative to further limit government spending will no doubt further constrain local government's attitude toward land development, and its inherent public costs.

A very general assessment of current, regional land development trends can be made from Table 13.1-1. Due to the slowdown in population growth, the amount of vacant land undergoing new development declined sharply in the early 1970's from that of the late 1960's. However, this decline in land consumption was not quite as sharp as the decline in population growth, due to lower overall density of development. Acreage currently zoned for new development is extensive - almost twice as much land as was developed over the 1965 to 1975 period. But, as discussed below, the portion of this land that is "prime" for development, in terms of public sector commitments for essential services, is limited. Also, burgeoning limitations to public sector fiscal capacity could make it even more limited.

13.2 SUBREGIONAL DEVELOPMENT PATTERNS

The subregional pattern of land development by county in Table 13.1-1 indicates that those locations that experienced the most development since 1965 were in the east and south Bay counties, whereas the greatest development potential in terms of vacant land now exists in the north Bay counties.

TABLE 13.1-1
LAND DEVELOPMENT IN THE BAY AREA
1965 - 1979

(Thousands of Acres)

County	Acres Developed 1975	New Development 65-70 70-75		Vacant Acres Zoned for Development 1979
Alameda	89.6	18.1	12.6	27.0
Contra Costa	67.8	17.6	9.5	61.3
Marin	26.7	7.5	4.0	22.5
Napa	12.4	5.2	1.5	9.7
San Francisco	24.0	3.3	.3	.9
San Mateo	58.8	14.1	5.5	31.1
Santa Clara	107.8	25.0	22.3	79.5
Solano	20.4	4.7	2.0	45.3
Sonoma	34.2	9.0	11.7	41.2
REGION	441.8	104.5	69.6	318.4

Sources: ABAG, Local Development Policy Survey.

_____, Projections '79 data base.

The three more urbanized counties of the East Bay and the Peninsula, which accounted for nearly one-half of the region's land development from 1965 to 1975, have remaining developable acreage equivalent to about one and one-half times the new development of that decade - just over one-third of the region's total supply. Santa Clara County, which experienced the most consistent increase in development over the years since 1965, accounted for about one-quarter of the region's new development. Land in this south Bay area zoned for development constitutes about one- and one-half times the amount developed in the 1965-1975 period and is about one-quarter of the region's developable land supply.

The four north Bay counties have become a more important component in the region's land development. Together they experienced over one-quarter of the region's total development during the 1965-1975 period. Their remaining acreage is almost three times as much as that developed since 1965, and comprises about one-third of the region's developable land supply.

The trend in location of new basic industry since 1965, as well as current public and private sector commitments, continues to emphasize the established job centers in San Francisco, the East Bay, the Peninsula, and north Santa Clara County, where the vacant developable land supply is being rapidly depleted. The raw land supply in the less urbanized locations away from the Bay itself and to the north is also becoming a less dependable indicator of growth potential as many local jurisdictions adopt more stringent growth control measures. More complex plan and permit review procedures, including quotas keyed to limited post-Proposition 13 public facilities, are supplementing more traditional techniques such as zoning.

13.3 INDUSTRIAL LAND DEVELOPMENT

The Bay Area has historically had a plentiful supply of land for industrial use. If land was not available in the desired location, it was sometimes created by filling San Francisco Bay, though such expeditious ways of encouraging industrial development are now regulated to preserve the Bay's environment. Thus, though the general supply of land for development is somewhat limited, and competition for land is growing, the supply of industrial land appears adequate.

As recently as 1975, the quantity of vacant land designated for industrial use by local governments in the Bay Area was well in excess of the approximately 55,000 acres then in industrial use. Table 13.3-1 indicates that a total of over 62,000 vacant acres are currently zoned for industrial use. An additional 2,700 acres, although not included in the table are considered by some agencies to have prime industrial potential by virtue of their location in redevelopment areas or areas marketed by airport or seaport authorities. Thus, a total industrial reserve approaching 65,000 acres constitutes one-fifth again as much land as has been needed so far.

Despite this ample industrial land reserve, some industries may still have difficulty finding appropriate sites in the Bay Area. The complex and fragmented permit process makes any general industrial land reserve only a preliminary measure of industrial development potential. Some industries may require locations with very special characteristics concerning site size, utility service, transportation access, etc. The industry itself or its preferred expansion sites may involve special environmental problems regarding waste disposal, air and water quality, environmental safety, or environmental conservation.

Changing fiscal policies of local governments could also affect local decisions on the industrial (or commercial) development of the industrial land reserve. In the past, the apparent tax base advantages of industrial development encouraged local governments to over-zone this category of land use. A substantial portion of the regional reserve of over 60,000 acres may be a carryover from the historic practice of zoning vast lowland areas as industrial. Its genuine suitability for meeting current needs of industrial expansion is often not determined until a specific site development is under consideration.

TABLE 13.3-1
INDUSTRIAL LAND DEVELOPMENT
IN THE BAY AREA
1975

County	Acres in Industrial Use 1975	Vacant Industrial Acreage		
		Industrial Parks	Other Acres Zoned	Total Acres
Alameda	14,210	3,770	6,360	10,130
Contra Costa	10,788	240	8,540	8,780
Marin	1,024	240	1,600	1,840
Napa	1,239	120	4,510	4,630
San Francisco	3,348	-	810	810
San Mateo	5,750	110	2,790	2,900
Santa Clara	13,453	4,660	8,340	13,000
Solano	3,041	3,450	13,550	17,000
Sonoma	2,330	530	2,720	3,250
REGION	55,183	13,120	49,220	62,340

Sources: ABAG, Local Development Policy Survey, 1976.

ABAG/Bay Area Air Pollution Control District, Vacant Industrial
Lands Inventory, 1975.

An initial assessment of the most readily developed industrial land supply is indicated in Table 13.3-1 as vacant industrial parks. About 13,000 acres constitutes "infill" of available sites in existing industrial parks where needed site improvements and services are either well established or already committed by public sector agencies. Information on the site characteristics of the remaining 49,000 vacant acres zoned for industry is available for the most significant sites, but information for the total land reserve is incomplete.

13.4 RESIDENTIAL DEVELOPMENT

The dwindling supply of land for residential development near job centers is a function both of the continuing trend toward lower densities and the frequent desire to locate housing away from the urbanized areas.

The trend to lower densities reflects not only more spacious lifestyles, but, in many cases, safety concerns. In the more developed locations around the Bay, such as Hayward or Redwood City and the older valley communities such as Mill Valley or Walnut Creek, the easily developed flat land is very much at a premium. More stringent standards for developing the remaining hillsides or marsh areas have resulted from unfortunate experiences over the years and usually entail lower housing densities. In 1975 the regional average density of housing was slightly

over eight units per acre with the older urban areas being higher (about 10 units per acres) and the younger suburban communities averaging just under five units per acres. Local plans and ordinances call for new housing development averaging between three and four units per acre regionwide. Generally the older urban communities allow somewhat higher densities than the average.

Estimates of the housing potential based only on zoning are shown in Table 13.4-1. Since, in practice, zoning densities often encompass a fairly wide range from one jurisdiction to another, assumptions are made based on their recent enforcement. The lower density estimate is made using the midpoint in the range of allowable densities for a given area, and the higher density estimate uses the maximum allowable number of units per acre.

Whereas the types of housing built regionwide in recent years was fairly evenly divided between conventional single family units and higher density buildings, current zoning provides largely for conventional single family units. The data on recent building practices reflect the picking and choosing of sites within the allowable zoning restrictions by the building industry, probably achieving somewhat higher density than the average allowed.

Table 13.4-2 shows that if current zoning is used as an indicator, a strengthening of the trend towards locating housing in the suburbs can be expected. Building activity in recent years has emphasized the older urban centers with over two-thirds of all new housing in the region being located there. However these urban centers account for only about 40 percent of future housing potential, assuming current zoning. Since the bulk of job opportunities remains in the urban centers, a continued trend toward housing locations away from job locations can also be anticipated.

TABLE 13.4-1
Housing Density and Potential
In The Bay Area
(Thousand of Units)

Housing Density Type	Building Permits 1969 - 1976		Estimated Range of Zoning Potential			
	Units By Permit	Percent of Total	Potential Units	Percent of Total	Potential Units	Percent of Total
Conventional Single Family Units	188.3	52	420.7	83	490.0	69
Clustered, Townhouse and Apartment Units	171.4	48	86.2	17	222.3	31
Total Units	359.7	100	506.9	100	712.3	100

Sources: Security Pacific National Bank, California Construction Trends, various issues.

ABAG, Local Development Policy Survey, 1976, unpublished.

TABLE 13.4-2

Housing Location and Potential
In The Bay Area
(Thousand of Units)

Housing Location	Building Permits 1969 - 1976		Estimated Range of Zoning Potential			
	Units By Permit	Percent of Total	Lower Density Estimate	Percent of Total	Higher Density Estimate	Percent of Total
Urban Centers	251.7	70	212.9	42	277.8	39
Suburban and Rural Areas	108.0	30	294.0	58	434.5	61
Total Units	359.7	100	506.9	100	712.3	100

Sources: Security Pacific National Bank, California Construction Trends, various issues.

ABAG, Local Development Policy Survey, 1976, unpublished.

Areas described as urban are highly developed now, at relatively high densities; they usually have some vacant acreage proposed for development, most of which has urban services now or such service is committed; and in most cases have rail transit service now, and/or established bus transit service.

Areas described as suburban are partially developed now, usually at low densities; they have extensive vacant acreage proposed for development, most of which lacks commitments for urban services, and have minimal transit service.

13.5 REGIONAL PATTERNS OF JOBS AND HOUSING

Regional trends from 1965 to 1978 in the location of jobs and housing can be illustrated using the ratio of employed residents to total employment within 15 subregional employment centers (Table 13.5-1). A ratio of about 1.0 implies a balance of employed residents to jobs within a subregional area, while a ratio less than 1.0 implies net in-commuting, and greater than 1.0 net out-commuting. It should be emphasized that although such a net commuting ratio is useful as a general indicator of job/housing trends, it fails to account for overall magnitudes of in-and out-commuting. More details are presented about the subregional centers in Chapter 14, with commuting data based on 1970 Census journey to work data.

From a regional perspective, the ratio of employed residents was approximately one in both 1965 and 1978, with a small proportion of commutes occurring across regional boundaries. However, when the subcenters are examined, different patterns emerge.

In the north Bay counties, the information indicates that Santa Rosa maintained a balance of employed residents and jobs, while the Fairfield-Vacaville area increased proportionally more in employed residents. The Vallejo-Martinez area moved in the opposite direction with a relative increase in jobs versus employed residents over the 1965 to 1978 period.

TABLE 13.5-1

EMPLOYMENT AND EMPLOYED RESIDENTS: 1965-1978

EMPLOYMENT** CENTERS	1965			1973			CHANGE 1965-1978		
	E*	ER*	$\frac{ER}{E}$	E	ER	$\frac{ER}{E}$	E	ER	$\frac{ER}{E}$
1. Santa Rosa	26.1	25.9	.99	46.5	49.2	1.05	1.05	20.4	1.14
2. Fairfield- Vacaville	13.6	13.5	.99	24.8	34.3	1.38	11.7	20.8	1.78
3. Marin	34.0	47.3	1.39	47.3	71.8	1.51	13.3	24.4	1.83
4. Richmond	42.1	68.3	1.62	52.9	62.4	1.17	10.8	1.4	.13
5. Vallejo- Martinez	37.7	34.5	.91	53.6	40.0	.70	15.9	5.5	.35
6. Pittsburg- Antioch	15.2	17.9	.98	23.3	31.4	1.34	5.1	13.5	2.64
7. East Bay	286.8	209.2	.72	330.4	219.6	.66	43.6	10.4	.24
8. Walnut Creek- Concord	32.0	56.6	1.77	64.8	95.5	1.47	32.8	38.9	1.19
9. San Francisco	400.3	175.0	.44	439.8	179.5	.41	39.0	4.5	.12
10. Hayward- Fremont	57.5	108.8	1.89	92.6	167.2	1.79	35.1	58.4	1.67
11. Livermore	12.4	12.6	1.02	22.8	22.6	.99	10.4	10.0	.96
12. South SF.- SFO	53.4	42.1	.79	80.1	52.3	.66	26.7	10.7	.40
13. San Mateo- Redwood City	69.8	84.8	1.21	38.2	108.5	1.23	18.4	23.3	1.29
14. Palo Alto-Mtn View-Sunnyvale	142.2	122.8	.86	277.8	194.9	.70	135.6	72.1	.53
15. San Jose- Santa Clara	134.5	159.7	1.18	243.6	276.2	1.13	109.1	116.5	1.07
Balance of Region	302.9	489.1	1.62	387.1	713.	1.84	84.2	224.2	2.67
Region	1664.0	1663.7	1.00	2275.6	2319.4	1.02	611.6	655.8	1.07

Source: ABAG, Projections '79 data base.

* E = Employment at place of work; ER = Employed residents at place of residence.

** See maps in Chapter 14 for geographic description of the centers.

One of the most striking trends illustrated by the data is the minimal increases in employed residents to the central job locations of San Francisco, the East Bay, and Richmond, while substantial job increases occurred in these same areas. In the south Bay, the Palo Alto-Mountain View-Sunnyvale area continued to show a larger growth of jobs than growth of employed residents, while the San Jose-Santa Clara employment center has shown a larger increase in employed residents.

Marin County, traditionally viewed as a suburban area, continued to increase more in employed residents than jobs, while the Walnut Creek-Concord area, also generally viewed as a suburban area, showed relative increases in jobs versus employed residents. The ratios still imply net out-commuting for the Walnut Creek-Concord area, but they do suggest a decreasing trend.

For the balance of the region outside these 15 employment centers, the general trend was an increase in employed residents versus jobs. This trend is consistent with that of housing construction outside the major job centers.

13.6 REFERENCES

- (1) ABAG, Local Development Policy Survey, Berkeley, 1976, unpublished.
- (2) ABAG, Projections '79 data base.
- (3) ABAG, Bay Area Air Pollution Control District, Vacant Industrial Lands Inventory, Berkeley, 1975, unpublished.
- (4) Security Pacific National Bank, California Construction Trends, various issues.

CHAPTER 14

MAJOR EMPLOYMENT CENTERS

14.1 INTRODUCTION

This chapter describes 15 employment subcenters which contain the bulk of the region's total employment and its economic base (Figure 14.1-A). The employment centers were chosen to provide a more detailed description of the geographic diversity of the region's economy. At the subregional level, there are great variations in industrial structures, accessibility characteristics and degrees of job concentration. The 15 employment centers constitute the core areas of the various local labor markets in the region. In order to insure representation of all geographic areas of the region, at least one center was chosen in each SMSA.

The subcenters are first compared in terms of their respective regional shares of total and basic employment and the amount of growth occurring between 1965 and 1978. Then, within each subcenter the economic structure is described with major employers or facilities highlighted. In addition, locational attributes, labor force commuting patterns, major retail centers, and housing characteristics are described.

The industrial structure is examined through the growth and distribution of 16 of the 18 employment classifications developed for ABAG's modeling system. Each classification is a grouping of specific 1967 Standard Industrial Classifications (SIC) components (Table 14.1-1). For purposes of highlighting major structural changes, the classifications used are Basic Manufacturing (classifications 3-8), Basic Non-Manufacturing (classifications 9-14), Local-Serving Retail Trade and Services (classifications 15 and 16), and Other Local-Serving (classifications 17 and 18). Agriculture, forestry, fisheries and mining (classifications 1 and 2) are not included.

The 15 employment centers selected for examination accounted for 82 percent of the region's total employment in 1965 and 83 percent in 1978 (Table 14.1-2). The centers with the largest share of the total regional employment in both 1965 and 1978 were San Francisco (24 and 19 percent, respectively), East Bay (17 and 15 percent, respectively), Palo Alto-Mountain View-Sunnyvale (9 and 12 percent, respectively), and Santa Clara-San Jose (8 and 11 percent, respectively).

Over the 13 year period from 1965 to 1978, 86 percent of the region's total employment growth was in these 15 employment centers. The centers with the greatest share of the region's employment growth were Palo Alto-Mountain View-Sunnyvale (22 percent), San Jose-Santa Clara (18 percent), East Bay (7 percent), and San Francisco (6 percent).

In 1965, the 15 employment centers had 85 percent of the region's basic employment (classifications 3-14 in Table 14.1-1). Those centers with the greatest shares of basic employment were San Francisco (26 percent), East Bay (20 percent), Palo Alto-Mountain View-Sunnyvale (11 percent),

FIGURE 14.1-A

MAJOR EMPLOYMENT CENTERS



TABLE 14.1-1

CORRESPONDENCE OF ABAG MODELLING GROUPS
TO THE STANDARD INDUSTRIAL CLASSIFICATION

ECONOMIC BASE CONCEPT	ABAG MODELLING SYSTEM INDUSTRY GROUP	1967 SIC COMPONENTS *
<u>BASIC INDUSTRIES</u>	1. Agriculture, forestry, fisheries	01-Agricultural production 07-Agricultural service and hunting and trapping 08-Forestry 09-Fisheries
	2. Mining	10-Metal mining 12-Bituminous coal and lignite mining 13-Crude petroleum and natural gas 14-Mining and quarrying of nonmetallic minerals, except fuels
	3. Printing and publishing	27-Printing and publishing
	4. Heavy industry	26-Paper and allied products 28-Chemicals and allied products 29-Petroleum refining and allied industries 30-Rubber and miscellaneous plastic products 32-Stone, clay, glass, and concrete products 33-Primary metal industries
	5. Food processing	20-Food and kindred products
	6. High technology manufacturing	19-Ordnance and accessories 36-Electrical equipment and supplies 38-Instruments and related products
	7. Metal fabrication, machinery, transportation equipment	34-Fabricated metal products 35-Machinery, except electrical 37-Transportation equipment
	8. Miscellaneous manufacturing	22-Textile mill products 23-Apparel and related products 24-Lumber and wood products 25-Furniture and fixtures 31-Leather and leather products 39-Miscellaneous manufacturing
Basic Non-Manufacturing	9. Long distance transportation	40-Railroad transportation 42-Motor freight transportation and warehousing 44-Water transportation 45-Transportation by air 46-Pipe line transportation
	10. Wholesale trade	50-Wholesale trade 52-Building materials, hardware, and farm equipment dealers
	11. Finance and insurance	62-Security and commodity brokers, dealers, exchanges, and services 63-Insurance carriers 67-Holding and other investment companies
	12. Business services	73-Business services
	13. Institutional services	82-Educational services (4-year colleges and universities) 84-Museums, art galleries, botanical, and zoological gardens 89-Miscellaneous services
	14. Federal and state government	91-Federal government 92-State government

TABLE 14.1-1 (Continued)

ECONOMIC BASE CONCEPT	ABAG MODELLING SYSTEM INDUSTRY GROUP	1967 SIC COMPONENTS *
<u>LOCAL-SERVING INDUSTRIES</u>		
Retail Trade and Services	15. Retail trade	<ul style="list-style-type: none"> 53 - Retail trade, general merchandise 54 - Food stores 55 - Automotive dealers and gasoline service stations 56 - Apparel and accessory stores 57 - Furniture, home furnishings and equipment stores 58 - Eating and drinking places 59 - Miscellaneous retail stores
	16. Retail services	<ul style="list-style-type: none"> 70 - Hotels, rooming houses, camps and other lodging places 72 - Personal services 75 - Automobile repair, automobile services and 76 - Miscellaneous repair services 78 - Motion pictures 79 - Amusement and recreation services, except motion pictures 86 - Nonprofit membership organizations 88 - Private households
Other Local-Serving	17. Professional services	<ul style="list-style-type: none"> 80 - Medical and other health services 81 - Legal services 82 - Educational services (kindergarten through junior colleges)
	18. Other Local-Serving	<ul style="list-style-type: none"> 15 - Building construction - general contractors 16 - Construction other than building construction general contractors 17 - Construction - special trade contractors 41 - Local and suburban transit and interurban passenger transportation 47 - Transportation services 48 - Communication 49 - Electric, gas and sanitary services 60 - Banking 61 - Credit agencies other than banks 64 - Insurance agents, brokers and service 65 - Real estate 66 - Combinations of real estate, insurance, loans, law offices 93 - Local government

SOURCE: *Executive Office of the President, Bureau of the Budget, Standard Industrial Classification Manual 1967, (Washington, D.C., U.S. Government Printing Office, 1967)

TABLE 14.1-2
TOTAL EMPLOYMENT IN MAJOR EMPLOYMENT CENTERS

Employment Center	Total Employment (000s)		Employment Change (000s)	Share of Region		Share of Regional Growth
	1965	1978		1965	1978	
Santa Rosa	26.1	46.5	20.4	.02	.02	.03
Fairfield-Vacaville	13.6	24.8	11.2	.01	.01	.02
Marin County	34.0	47.3	13.3	.02	.02	.02
Richmond	42.1	52.9	10.8	.03	.02	.02
Vallejo-Martinez	37.7	53.6	15.9	.02	.02	.03
Pittsburg-Antioch	18.2	23.3	5.1	.01	.01	.01
East Bay	186.8	330.4	43.6	.17	.15	.07
Walnut Creek-Concord	32.0	64.8	32.8	.02	.03	.05
San Francisco	400.8	439.8	39.0	.24	.19	.06
Hayward-Fremont	57.5	92.6	35.1	.04	.04	.06
Livermore	12.4	22.8	10.4	.01	.01	.02
South San Francisco-San Francisco Airport	53.4	80.1	26.7	.03	.04	.04
San Mateo-Redwood City	69.8	88.2	18.4	.04	.04	.03
Palo Alto-Mountain View-Sunnyvale	142.2	277.8	135.6	.09	.12	.22
Santa Clara-San Jose	134.5	243.6	109.1	.08	.11	.18
Employment Center Sub-Total	1361.1	1888.5	527.4	.82	.83	.86
Balance of Region	302.9	387.1	84.2	.18	.17	.14
Regional Total	1664.0	2275.6	611.6	1.00	1.00	1.00

Source: ABAG Projections '79 data base.

and San Jose-Santa Clara (8 percent). By 1978, the share of the region's total basic employment held by the 15 centers had decreased to 83 percent (Table 14.1-3). There was a minor shift in the ranking of the four centers with the greatest shares of basic employment: San Francisco (21 percent), Palo Alto-Mountain View-Sunnyvale (16 percent), East Bay (15 percent), and Santa Clara-San Jose (11 percent).

Over the 1965 to 1978 period, the 15 centers attracted 79 percent of the region's basic employment growth. The centers with the greatest share of the basic employment growth over this period were Palo Alto-Mountain View-Sunnyvale (30 percent), Santa Clara-San Jose (21 percent), San Francisco (7 percent), and Hayward-Fremont (5 percent).

Commuting patterns are derived from the 1970 Census journey to work data (10). Two important indicators are presented for each employment center. The first is the proportion of total work trips which are made within the center, i.e., the number of persons who both live and work in the center. The second indicator, presented in map form, shows the origins of 90 percent of the remaining (i.e., originating outside the employment center) work trips. These externally generated trips are based on small area counts in rank-order, and, thus represent all important origin sites in the local labor markets.

TABLE 14.1-3
BASIC EMPLOYMENT IN MAJOR EMPLOYMENT CENTERS

Employment Center	Basic Employment (000s)		Employment Change (000s)	Share of Region		Share of Regional Growth
	1965	1978		1965	1978	
Santa Rosa	7.0	13.5	6.5	.01	.01	.02
Fairfield-Vacaville	5.9	8.0	2.1	.01	.01	.01
Marin County	8.6	9.0	.4	.01	.01	.00
Richmond	19.0	17.2	-1.8	.02	.02	-.01
Vallejo-Martinez	21.1	24.9	3.8	.03	.02	.01
Pittsburg-Antioch	11.2	10.3	-.9	.01	.01	.00
East Bay	158.1	164.6	6.5	.20	.15	.02
Walnut Creek-Concord	5.2	14.7	9.5	.01	.01	.03
San Francisco	206.7	228.9	22.2	.26	.21	.07
Hayward-Fremont	13.8	33.6	14.8	.02	.03	.05
Livermore	7.0	13.3	6.3	.01	.01	.02
South San Francisco-San Francisco Airport	36.4	45.4	9.0	.05	.04	.03
San Mateo-Redwood City	26.6	35.9	9.3	.03	.03	.03
Palo Alto-Mountain View-Sunnyvale	85.4	174.8	89.4	.11	.16	.30
Santa Clara-San Jose	60.0	123.5	63.0	.08	.11	.21
Employment Center Sub-Total	677.5	917.6	240.1	.35	.23	.79
Balance of Region	118.1	182.7	64.6	.15	.17	.21
Regional Total	795.6	1100.3	304.7	1.00	1.00	1.00

Source: ABAG Projections '79 data base.

14.2 SANTA ROSA

14.2.1 Introduction

Santa Rosa is primarily a local-serving employment center (Figure 14.2-A). In 1975, over 70 percent of all jobs were in retail trade and services and in other local-serving jobs. The Coddington and Montgomery Village Shopping Centers are the two major retail centers in the area. Planned commercial redevelopment in downtown Santa Rosa may serve to increase the significance of local-serving jobs in the near future.

Manufacturing is a small but growing part of Santa Rosa's economic base (see Industrial Structure section). Hewlett Packard and Optical Coating Laboratories are two of the largest basic industrial employers. It is important to note that small businesses play an important role in Sonoma County. In 1978, over 80 percent of all manufacturing businesses had less than 25 employees, while about five percent had more than 100 employees (4).

Between 1972 and 1979 over half the acreage of new industrial and commercial development which located in Sonoma County was captured by Santa Rosa (4). Both commercial and industrial uses are dispersed throughout the city with major economic activity areas located in the downtown area, along Highway 101, near the airport, and on the city's northern outskirts.

Public employment also constitutes a significant portion of Santa Rosa's employment, since Sonoma County government offices are housed here.

Santa Rosa is linked to the other urbanized areas in the region by Highway 101 which provides direct access to Marin County and San Francisco to the south. Highways 37 and 116 link Sonoma County with Napa and Solano Counties to the east. The Golden Gate Bridge, Highway, and Transit District provides regional transit service to and from San Francisco, and Santa Rosa also has local transit service.

14.2.2 Industrial Structure

The Santa Rosa employment center accounted for two percent of the total employment and one percent of the total basic employment in the region in 1978. During the period 1965 to 1978, it received three percent of the regional growth in total employment and two percent of the regional growth in basic employment.

Table 14.2-1 shows the industrial structure of this employment center. All sectors showed an increase over the 13 year period of 1965 to 1978. Basic manufacturing employment increased 227 percent, other local-serving employment increased 94 percent, and jobs in basic non-manufacturing and retail trade and services increased at the more moderate rate of 47 percent.

FIGURE 14.2-A

SANTA ROSA EMPLOYMENT CENTER

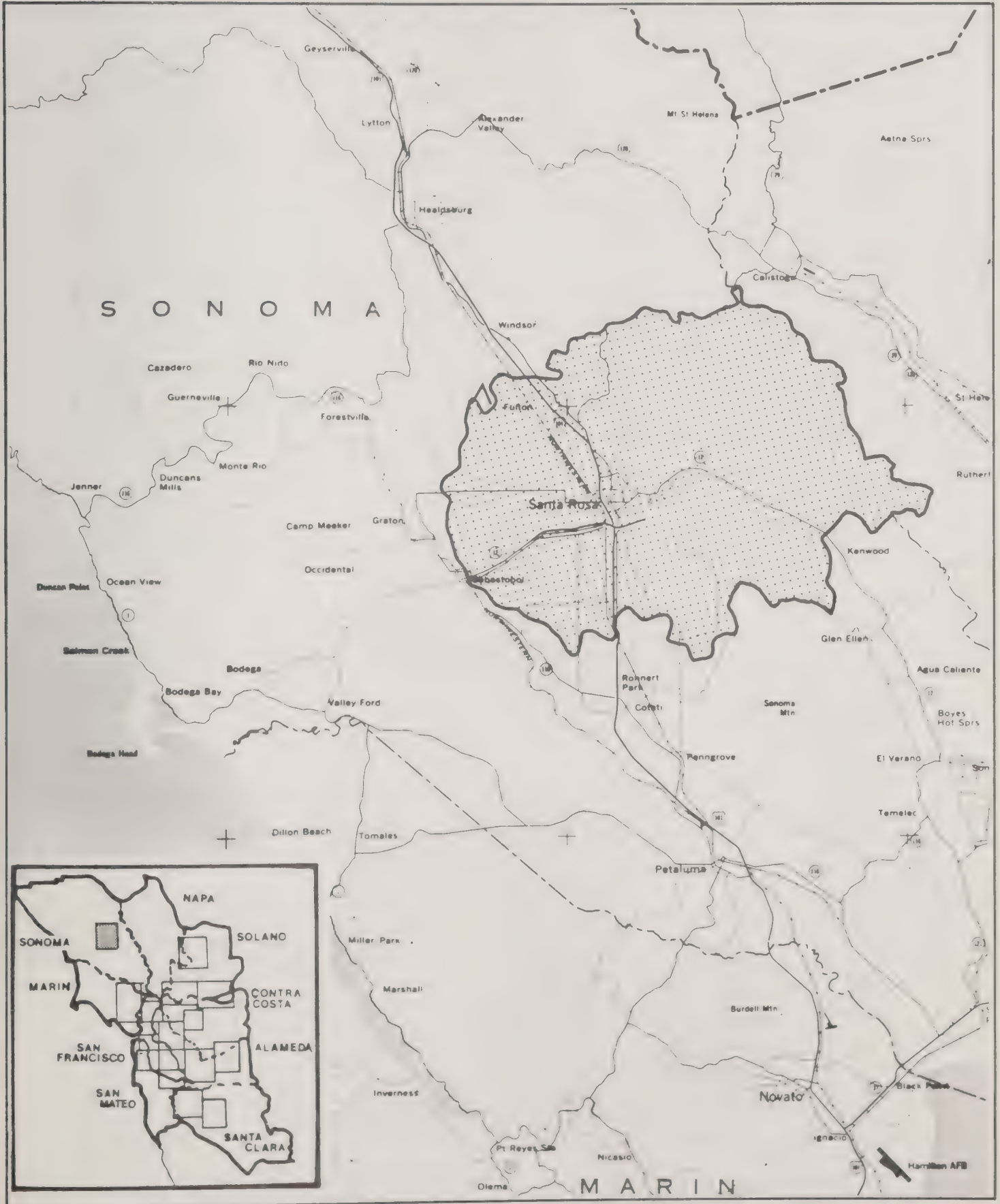
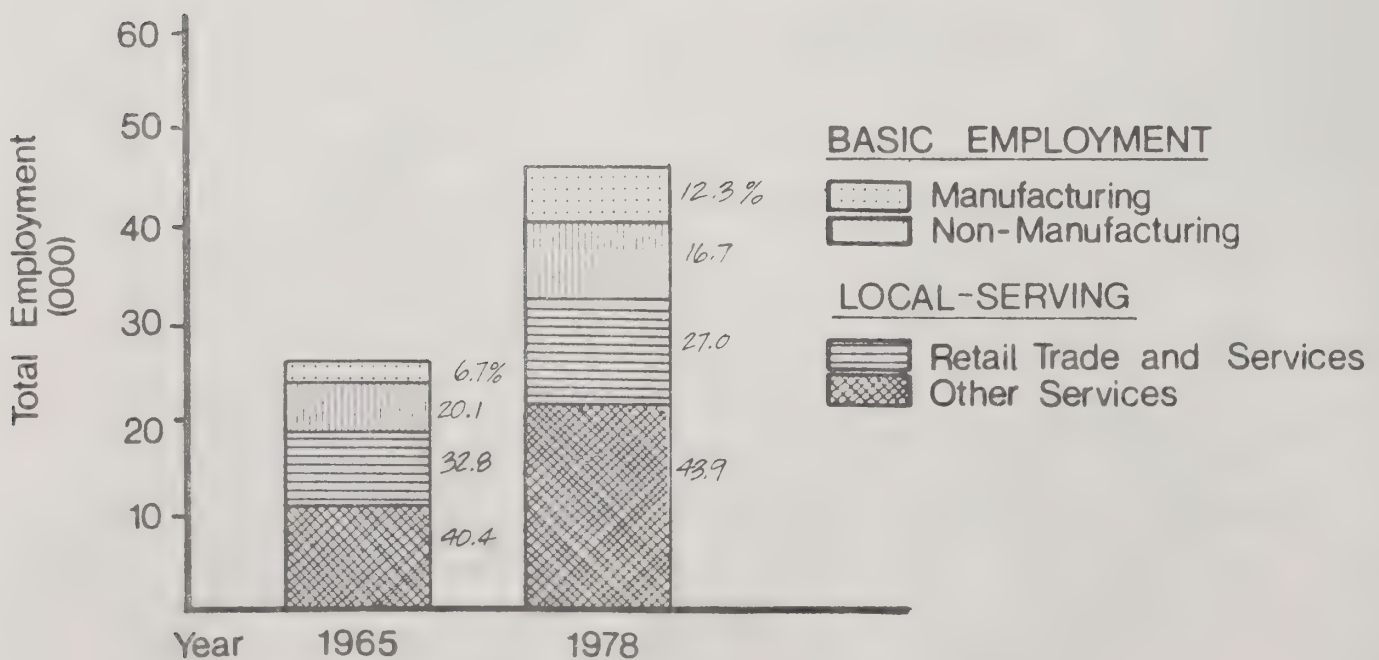


TABLE 14.2-1
SANTA ROSA ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	1753.	6.7	5735.	12.3	3982.	227.2
Basic Non-Manufacturing	5234.	20.1	7742.	16.7	2508.	47.9
Retail Trade and Services	8545.	32.8	12564.	27.0	4019.	47.0
Other Local-Serving	10518.	40.4	20415.	43.9	9897.	94.1
Total	26050.	100.0	46456.	100.0	20406.	78.3

Source: ABAG Projections '79 data base.

FIGURE 14.2-B
SANTA ROSA
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

Within the basic manufacturing sector, high-technology became the largest employment classification in 1975. Hewlett Packard is the largest high-technology employer. Metal fabrication and food processing were other major manufacturing employment classifications which showed employment increases between 1965 and 1978. Even with these increases, manufacturing employment was the smallest of the four employment sectors in both 1965 and 1978.

The shares of employment in the other three sectors remained fairly constant over the 13 year period. In 1978, the other local-serving sector, which includes construction, local government, transportation, communications, utilities, and professional services, provides some 44 percent of the total jobs in the Santa Rosa employment center, retaining its position as the largest employment sector. Retail trade and services, while remaining the second largest employment category, lost six percent of its share of total jobs over the 1965 to 1978 period. The share of employment in the basic non-manufacturing category also decreased over this period, particularly in the area of finance and insurance.

14.2.3 Labor Force Commuting

In 1970, origin-destination data showed that 81 percent of those who worked in Santa Rosa also lived there. Of the 19 percent who commuted from outside this employment center, 90 percent came from elsewhere in Sonoma County (10). In Figure 14.2-C, the shaded interior area is the Santa Rosa employment center, while the exterior ring represents the 90 percent commute area.

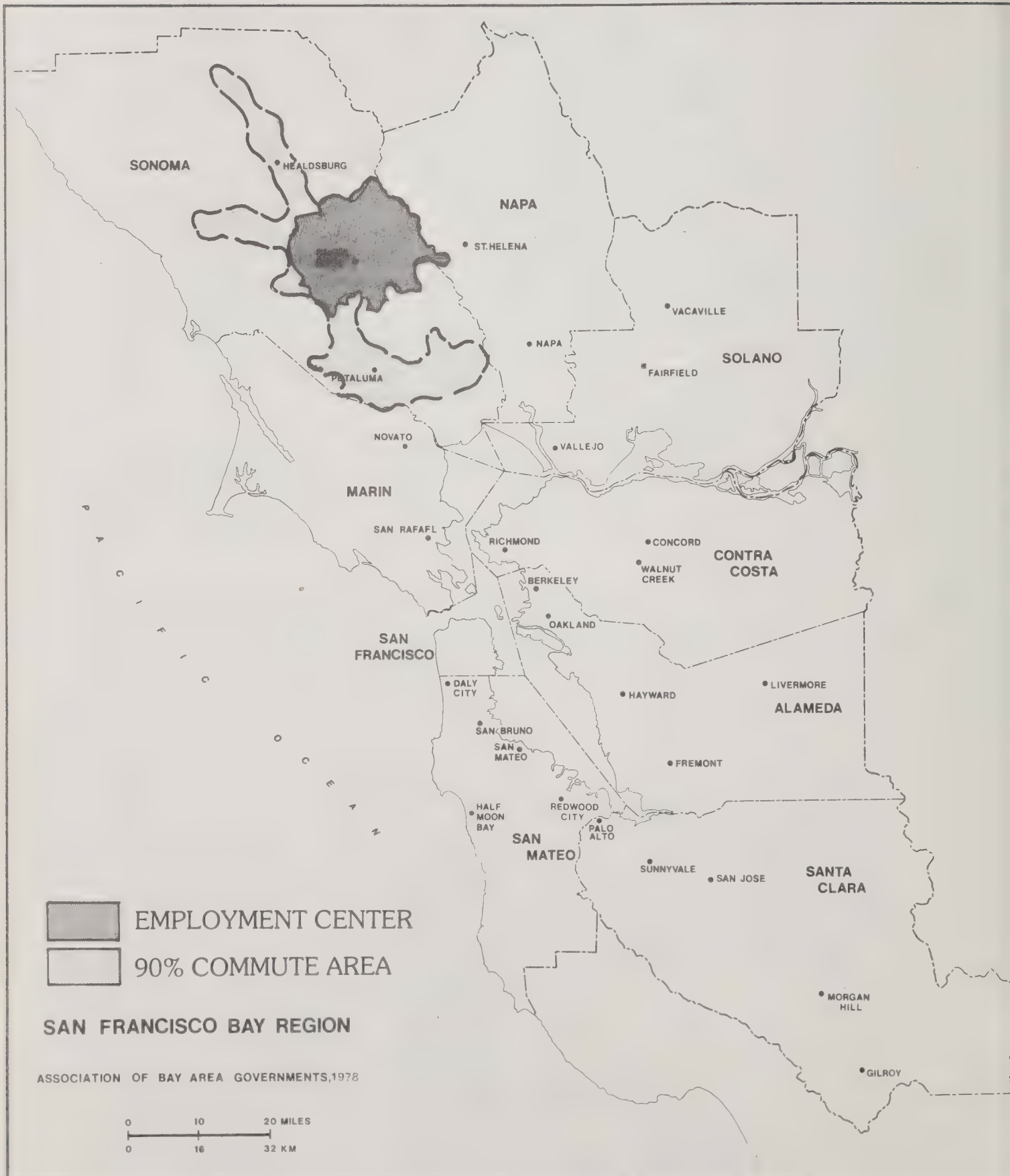
Since 1970, the high proportion of people living and working locally has probably been maintained due to the availability of moderately priced housing in Sonoma County compared with the relatively high cost of housing in Marin County. In 1975, the median value of homes in Marin was \$57,925, 66 percent higher than Sonoma's median home value of \$38,427. The median rent level in Marin (\$269) was 54 percent higher than that in Sonoma (\$146) (1).

Likewise, the availability of housing in Sonoma County compared with Napa County may serve to limit inter-county commuting. While housing costs are comparable, there is less new housing available in Napa County, partly due to recent growth management efforts. Between 1970 and 1975, the population growth rate in Sonoma County exceeded the Napa County rate by more than 50 percent (1). Limited highway and transit accessibility also serves to minimize commuting between Napa County and this employment center.

FIGURE 14.2-C

SANTA ROSA

COMMUTE AREAS



14.3 FAIRFIELD-VACAVILLE

14.3.1 Introduction

Even though the number of federal and state government jobs in the Fairfield-Vacaville center has decreased since 1965, this is still the largest employment category in this employment center (Figure 14.3-A), representing almost 18 percent of total jobs in 1975. This figure does not include military personnel at Travis Air Force Base, one of the region's major military facilities. Apart from the military, the California Medical Facility in southern Vacaville is the largest employer in this center. Other major economic activities include food processing, distribution, and retail sales. Local governments are encouraging development by zoning large areas for industrial uses. A recently approved 600-acre industrial park (Vaca Valley) is planned at the I-80/I-505 interchange to increase light manufacturing and warehousing activities. In the southern part of the center, the Collinsville-Montezuma Hills area is also planned to support industrial development.

Major highways serving the Fairfield-Vacaville center include I-80, which connects this employment center with Richmond, Oakland, and San Francisco to the west, and with Sacramento to the east; Highway 21 and I-680 which provide access south to Central Contra Costa County, the Livermore Valley, and Santa Clara County; Highway 37 which connects this area with Napa, Sonoma, and Marin Counties to the west; and I-505 which provides a link with cities in the far northern part of the State.

Regional transit service is provided by Greyhound to both Vacaville and Fairfield, and the City of Vacaville provides local transit service within the city limits.

14.3.2 Industrial Structure

In 1978, one percent of the total employment in the region was located in the Fairfield-Vacaville employment center, and less than one percent of the regional basic employment was in this center. Between 1965 and 1978 two percent of the total employment growth and less than one percent of the region's basic employment growth went to this center.

The other local-serving sector including construction, local government, transportation, communications, and professional services, had the largest increase (177 percent). Basic manufacturing employment increased by 82 percent, while retail trade and services also had a substantial increase in new jobs (55 percent). The smallest percentage increase in employment was in the basic non-manufacturing sector (19 percent). Although all employment sectors in this center increased in size over the 13 year period, as Table 14.3-1 shows, the shares of employment of each sector have shifted significantly.

In both 1965 and 1978, basic manufacturing maintained a constant 11 percent share of the center's total employment. Food processing was the largest employment classification in the manufacturing sector in both

FIGURE 14.3-A

FAIRFIELD — VACAVILLE EMPLOYMENT CENTER

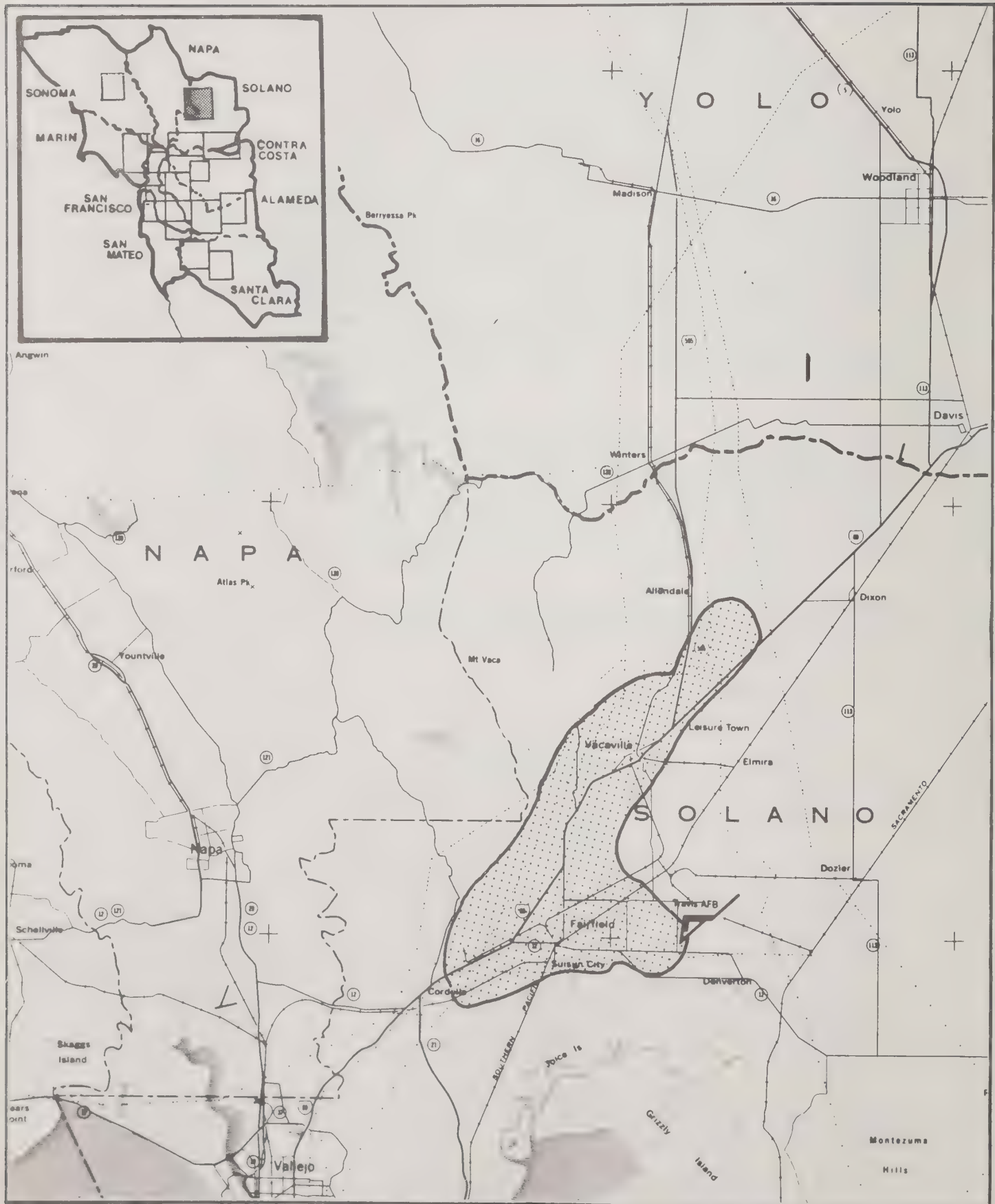
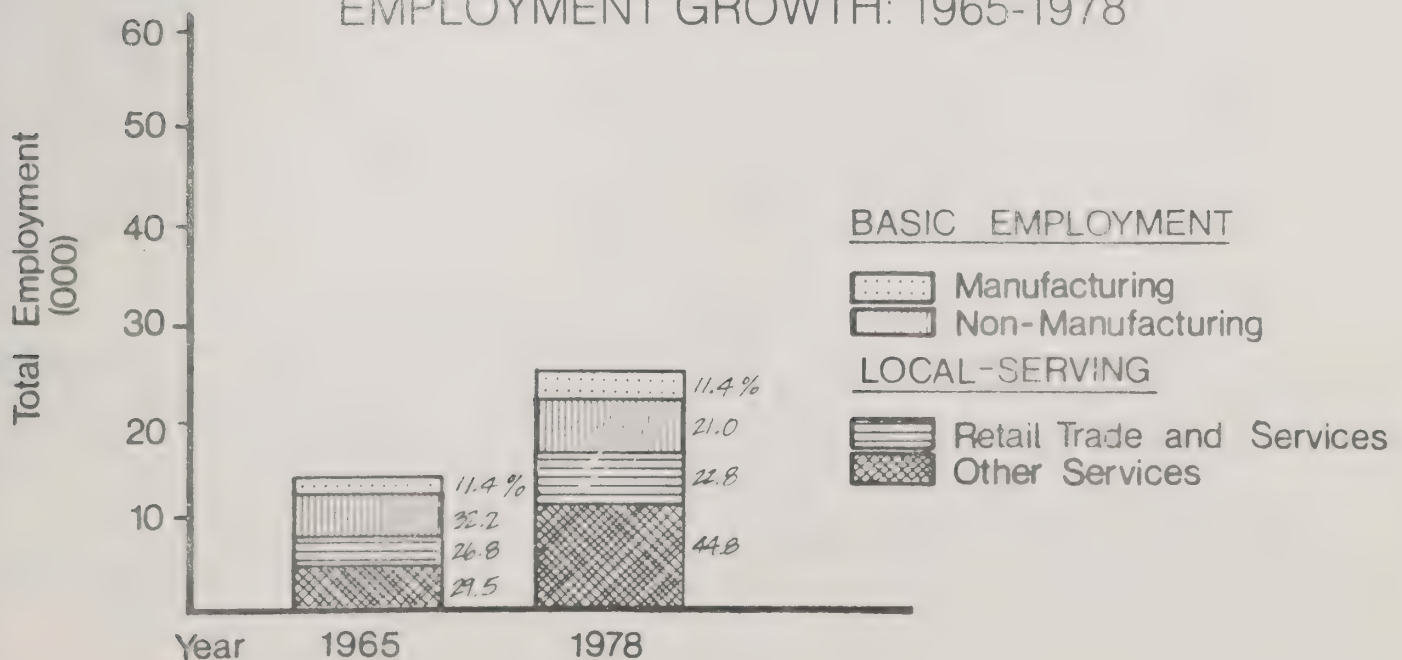


TABLE 14.3-1
FAIRFIELD-VACAVILLE ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	1552.	11.4	2826.	11.4	1274.	82.1
Basic Non-Manufacturing	4374.	32.2	5221.	21.0	847.	19.4
Retail Trade and Services	3647.	26.8	5662.	22.8	2015.	55.3
Other Local-Serving	4010.	29.5	11113.	44.8	7103.	177.1
Total	13583.	100.0	24823.	100.0	11240.	82.7

Source: ABAG Projections '79 data base.

FIGURE 14.3-B
FAIRFIELD-VACAVILLE
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

1965 and 1978, even though it lost 428 employees between 1965 to 1970. The decrease in food processing employment was offset by employment increases in metal fabrication, machinery, and transportation equipment in high-technology and in heavy industry. By 1978, the share of the basic non-manufacturing employment sector, the third largest sector in this center, decreased from 32 percent of the center's employees to 21 percent. Within this sector, federal and state government, the single largest employment classification in 1965, became the third largest classification between 1965 and 1970, and experienced little growth from 1970 to 1975. This was probably due to the decrease in employment at Travis Air Force Base as U.S. participation in the Vietnam War came to an end. The largest job increases in the basic non-manufacturing sector over the 1965 to 1978 period occurred in the wholesale trade and business services classifications.

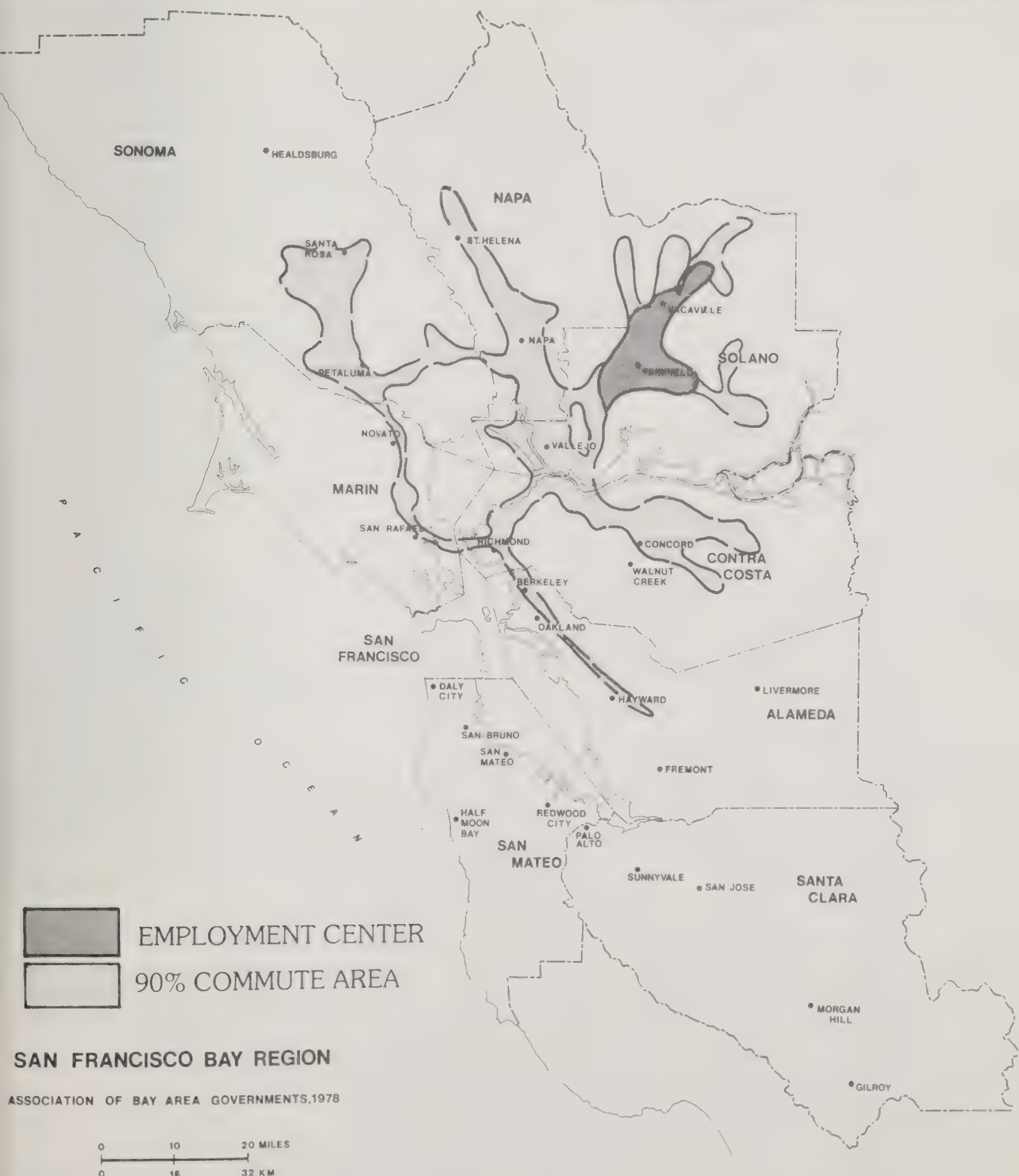
Retail trade and services became the center's second largest employment sector in 1978, even though it experienced a four percent loss in its share of employment over the 1965 to 1978 period. By 1978, the other local-serving sector had risen from the second largest to the largest employment sector, employing 45 percent of all employees in this center. Jobs in professional services, such as the health, legal, and educational fields, doubled over the 1965 to 1978 period. There was also a substantial increase in construction, local transportation services, banking, real estate, insurance, and local government.

14.3.3 Labor Force Commuting

In 1970, origin-destination data showed that 80 percent of those working in the Fairfield-Vacaville employment center also lived there. Twenty percent of the total commute trips came from outside this employment center. Ninety percent of these external commute trips came from elsewhere in Solano County, southern Sonoma and Napa Counties, northern Contra Costa County and scattered locations in the East Bay (10). These commute figures do not include military trips (to and from Travis Air Force Base) or trips from outside the region. In Figure 14.3-C, the shaded interior area is the Fairfield-Vacaville employment center, while the exterior ring represents the 90 percent commute area. The Davis and Sacramento areas probably also house some commuters who work in this employment center.

Since 1970 this area has experienced rapid residential development. Between 1970 and 1975, household population grew four times faster than the regional rate; households and housing units grew three times faster than the rate for the region (1). During the same period, total employment grew by eight percent, less than one fourth the rate of household growth. The percentage of people living and working in this area may have increased because of the availability of moderately priced housing. Given the rate of residential growth above that for jobs, it is also probable that out-commuting also increased substantially during these years.

FIGURE 14.3-C
**FAIRFIELD — VACAVILLE
 COMMUTE AREAS**



14.4 MARIN COUNTY

14.4.1 Introduction

Employment opportunities in the Marin County employment center (Figure 14.4-A) consist primarily of retail trade and services and other local-serving jobs. The accessibility of major shopping centers and the relative affluence of the population are key factors supporting the growth of retail trade and services. Major commercial uses include the Northgate Shopping Center, Larkspur Landing, Town and Country Village, the Corte Madera Shopping Center, and downtown city shopping areas. Presently, there are plans to expand, redevelop, and build new shopping centers. Commercial uses are concentrated in south central Marin County.

This employment center has always lacked significant manufacturing uses, which historically have comprised less than 10 percent of total employment (see Industrial Structure section). The emphasis on local-serving activities is consistent with the area's development as a residential suburb. The largest employers in the county are the County Hospital District, Pacific Telephone, and Fireman's Fund Insurance Company. Fireman's Fund may soon become the largest employer if present plans to build a new facility in Novato are approved. This proposal, and others, underscore the potential for office growth in this employment center.

Major economic activities are located close to Highway 101 and in central business areas of the cities. Highway 101 is the major north-south thoroughfare, connecting urbanized Marin County with San Francisco via the Golden Gate Bridge. Highway 17 provides east-west access to Richmond and the East Bay. This linkage is presently being improved through the construction of the Hoffman Freeway in Richmond. Transit service in Marin County is provided by the Golden Gate Bridge, Highway, and Transit District which operates bus and ferry services to San Francisco.

The Marin County employment center has a large potential for both retail growth and office development. At least six office projects totaling 470,000 square feet are under construction; proposals for eight more projects totaling 400,000 square feet have been approved; and further office developments totaling 2,087,700 square feet are also being proposed. Commercial developments totaling 555,000 square feet have been approved or are under construction (5).

14.4.2 Industrial Structure

The Marin County employment center accounted for two percent of the total regional employment and less than one percent of the total regional basic employment in 1978. Its share of the total regional employment growth over the 1965 to 1978 period was two percent. However, its share of the regional basic employment growth was only one-tenth of one percent.

MARIN COUNTY EMPLOYMENT CENTER



All sectors, except basic non-manufacturing, increased in employment, and the order of employment sector importance in the center remained the same throughout the 13 year period. However, three of the four sectors experienced decreases in their shares of total employment (Table 14.4-1).

The basic manufacturing sector experienced a slight decline in its share of total jobs even though the number of manufacturing jobs increased by 19 percent. All manufacturing classifications decreased in their share of total jobs over the 13 year period, most during 1970 to 1975. High-technology was the largest employment classification in the basic manufacturing sector throughout the period.

The basic non-manufacturing sector experienced a decline of one percent in employment from 1965 to 1978, and its share of total employment declined by five percent over the same period. A large loss in federal and state government employment from 1975 to 1978 was offset by earlier employment increases in wholesale trade, finance and insurance, and institutional services. In fact, the 1965 employment in institutional services more than doubled by 1975.

Retail trade and services, the second largest sector in the Marin County employment center, increased by 22 percent between 1965 and 1978. Both retail trade and retail services had large employment increases, 16 percent and 25 percent, respectively. However, this sector's share of the total employment in the center declined four percent. Retail stores, such as food, furniture, automotive, and general merchandise, have been the largest retail employers.

The other local-serving sector experienced the largest employment increase, 79 percent, and has consistently had the largest share of total jobs in this center. Construction and related services, banking, real estate, insurance, finance, and local government have been the largest employers in Marin County since 1965. Professional services - health, legal, and educational - also experienced consistent employment growth.

14.4.3 Labor Force Commuting

In 1970, origin-destination data showed that 59 percent of those who worked in the Marin County employment center also lived there. Forty-one percent of the labor force commuted in from other areas. Ninety percent of the in-commuters came from elsewhere in Marin County, Sonoma County north to Santa Rosa, San Francisco, western Contra Costa County and Vallejo in Solano County (10). In Figure 14.4-C, the shaded interior area is the Marin County employment center, while the exterior ring represents the 90 percent commute area.

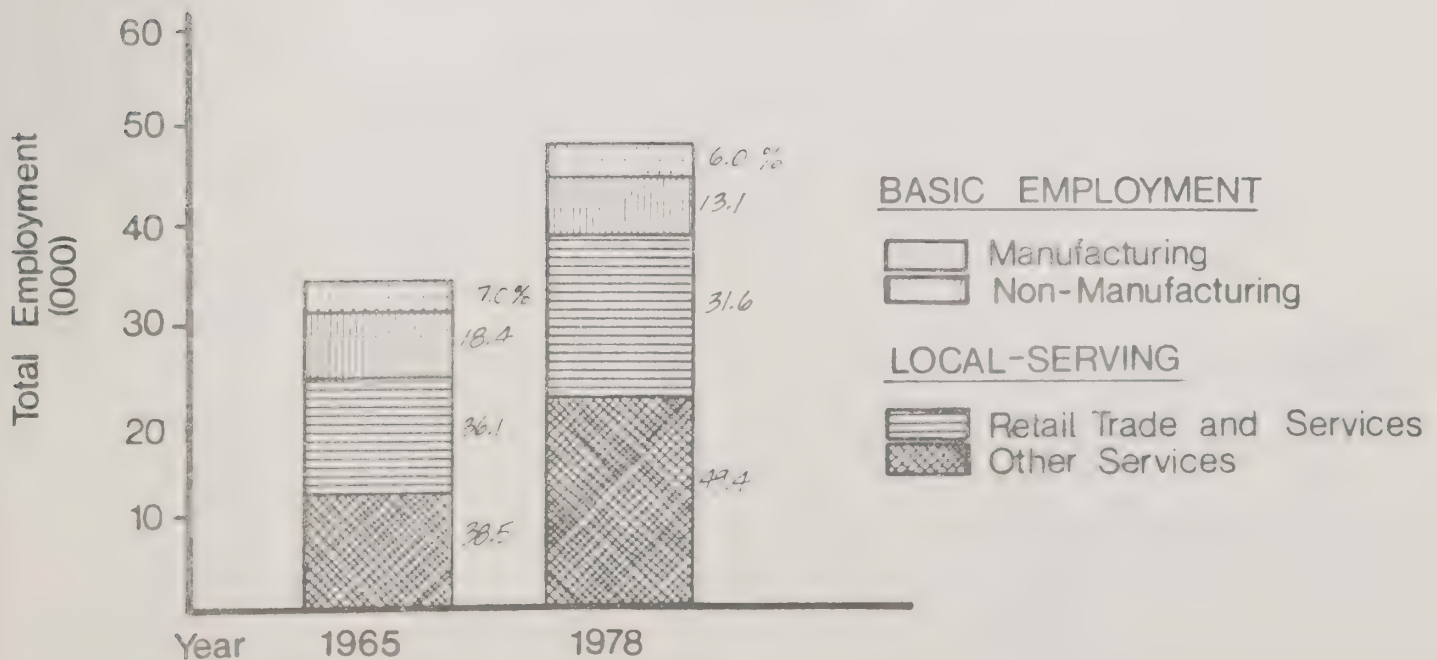
The high cost of housing in Marin County probably serves to deter more of the work force from both living and working in this area. Countywide, the median home and rent values have been the highest in the region (1). However, two current economic development trends could serve to alter the proportion of residents employed locally. First,

TABLE 14.4-1
MARIN COUNTY ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	2365.	7.0	2824.	6.0	459.	19.4
Basic Non-Manufacturing	6265.	18.4	6199.	13.1	-66.	-1.0
Retail Trade and Services	12270.	36.1	14936.	31.6	2666.	21.7
Other Local-Serving	13087.	38.5	23372.	49.4	10285.	78.6
Total	33987.	100.0	47332.	100.0	13345.	39.3

Source: ABAG Projections '79 data base.

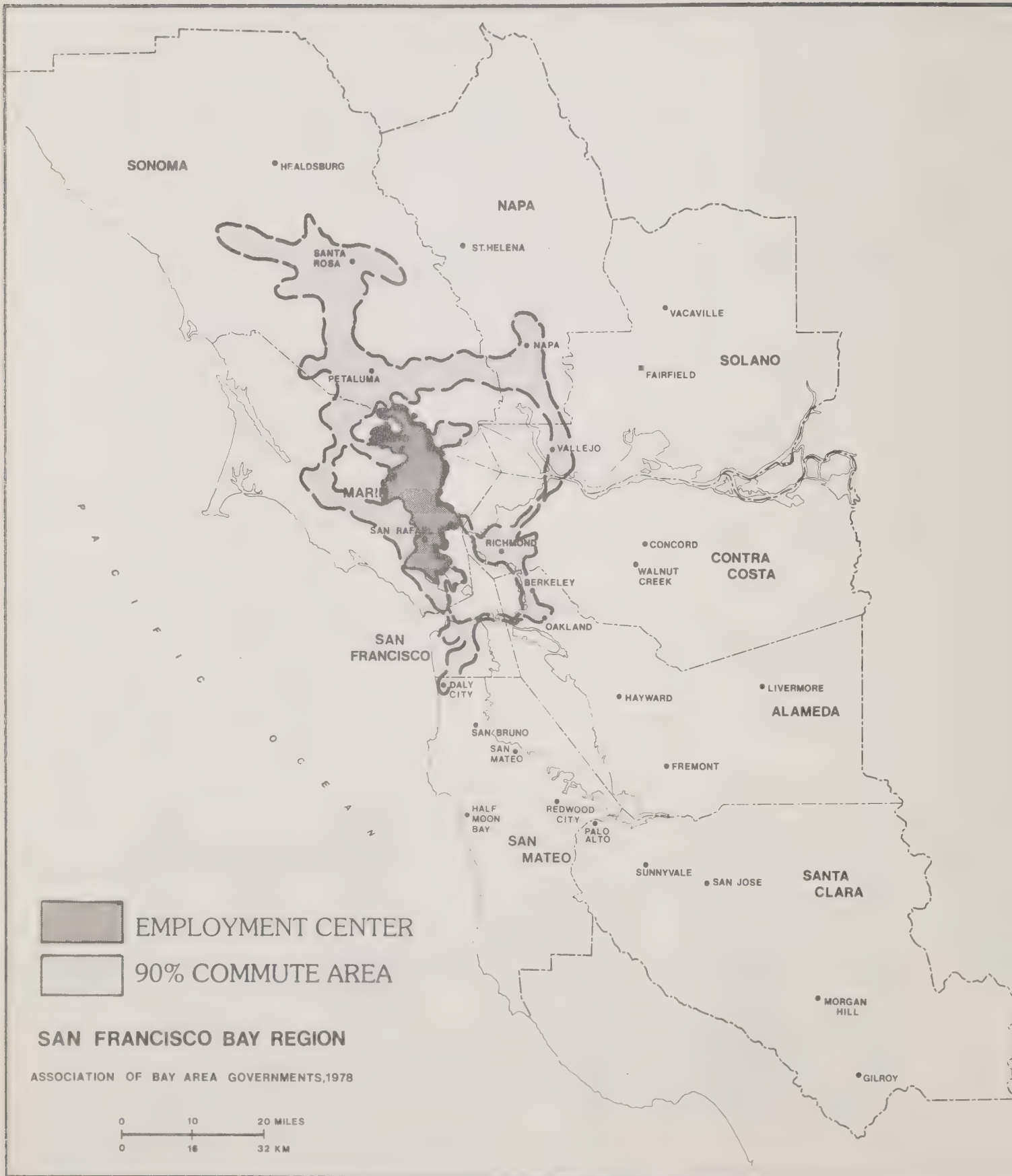
FIGURE 14.4-B
MARIN COUNTY
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

FIGURE 14.4-C

MARIN COUNTY COMMUTE AREAS



existing plans to expand or construct major new retail facilities may increase the number of people living and working in this employment center if a significant portion of the labor force consists of secondary wage earners. Otherwise, the cost of housing will probably exceed the potential earnings of most retail sales and services employees. Second, the trend towards new office development, with significant numbers of professional and managerial employees, may relocate more jobs in a housing market which currently experiences a high proportion of out-commuting.

14.5 RICHMOND

14.5.1 Introduction

Major industries in the Richmond employment center (Figure 14.5-A) include oil and chemical companies. Some of the largest basic manufacturing employers are Chevron and Union Oil, as well as the Chevron Research and Chemical Companies. Most of the basic industry in Richmond is located in the southern and western parts of the city along the bay. Richmond's economic development policy emphasizes the need to strengthen the role of port facilities.

The public sector also represents a significant source of jobs in this center. The Social Security Administration, Amtrak, and the Post Office all operate major facilities here. The Richmond Unified School District is the largest local employer in the center.

Major retail centers include downtown areas in central Richmond, El Cerrito Plaza in the southern part of the employment center, and the Hilltop Shopping Center in north Richmond along I-80.

Major highways include I-80 which links Richmond to Berkeley, Oakland, and San Francisco, to the south and west, and to Solano County and Sacramento to the northeast. Highway 17, the Nimitz Freeway, runs south through Alameda County to San Jose in Santa Clara County, and west to San Rafael in Marin County. Access to Marin County is presently being improved through the construction of I-180, the Hoffman Freeway.

Richmond is the northern terminus of BART which provides transit access to and from San Francisco, Oakland, southern Alameda County and with transfer, central Contra Costa County. AC Transit, which operates throughout Alameda and Contra Costa Counties, also provides service to this employment center.

14.5.2 Industrial Structure

In 1978, the Richmond employment center had two percent of all jobs in the region, and almost two percent of all basic employment in the region. Its share of total employment growth over the 1965 to 1978 period was two percent. It experienced a six-tenths of one percent decrease in basic employment over this same period.

Growth in the other local-serving sector was very rapid, especially between 1975 to 1978. Retail trade and services gained no new jobs between 1975 and 1978, while basic non-manufacturing employment increased one percent. Basic manufacturing employment declined 31 percent between 1965 and 1978 (Table 14.5-1).

The shares of total employment held by each sector have shifted considerably since 1965. Basic manufacturing was the leading employment sector in 1965. By 1978, this sector was fourth in its share of total employees in the center. All manufacturing classifications, except miscellaneous manufacturing, decreased in their shares of total jobs,

FIGURE 14.5-A

RICHMOND EMPLOYMENT CENTER

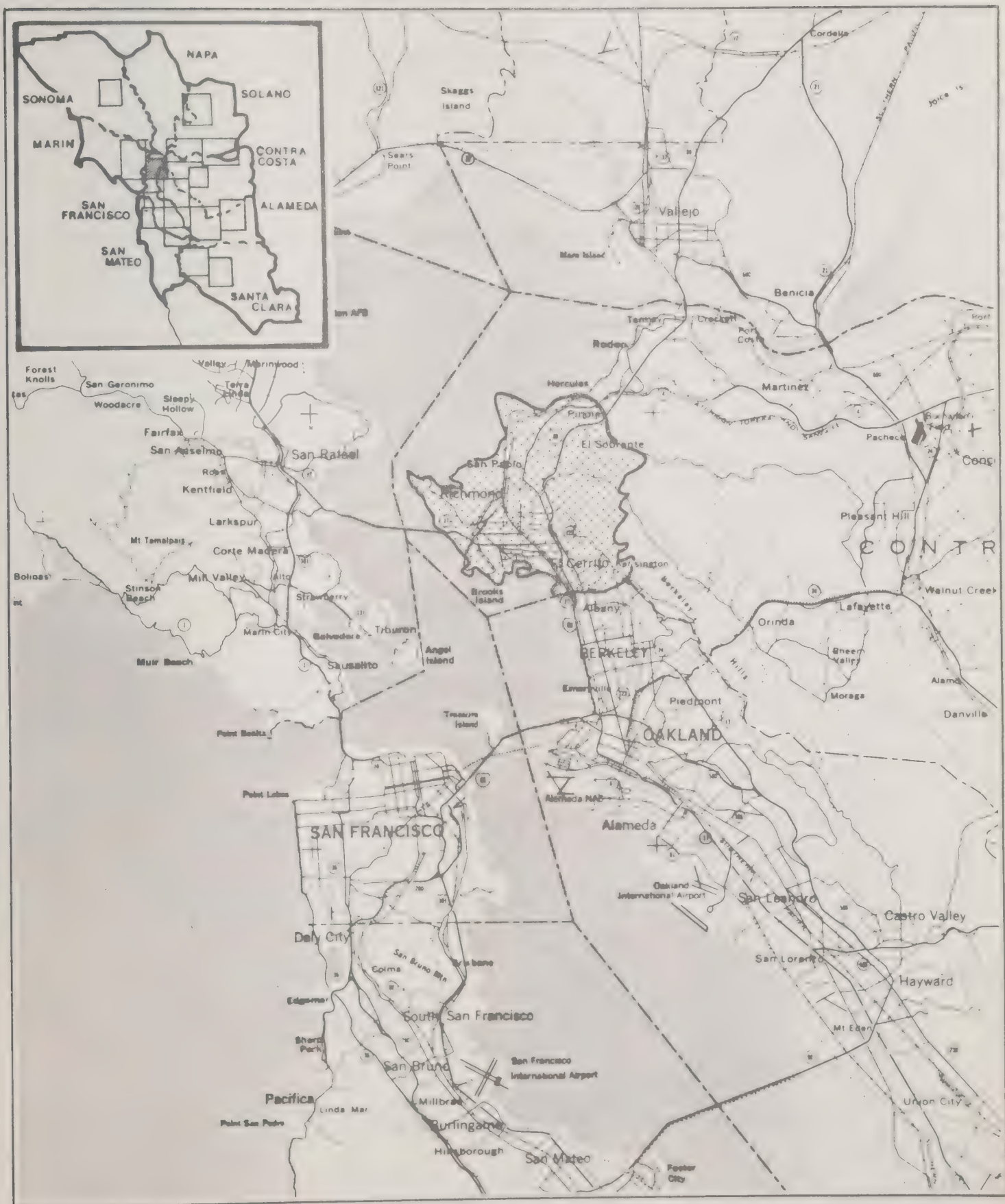
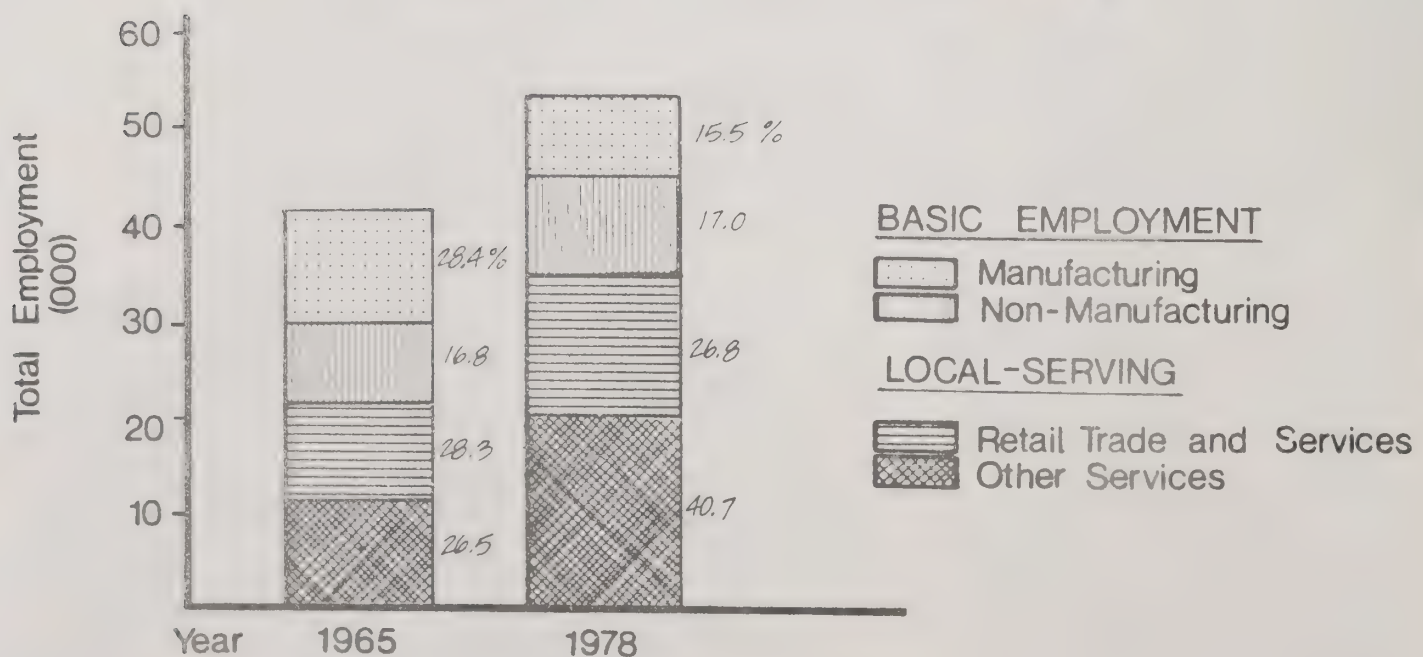


TABLE 14.5-1
RICHMOND ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	EmPLY. Change	Percent Change
Basic Manufacturing	11957.	28.4	8209.	15.5	-3748.	-31.3
Basic Non-Manufacturing	7061.	16.8	9007.	17.0	1946.	27.6
Retail Trade and Services	11923.	28.3	14164.	26.8	2241.	18.8
Other Local-Serving	11166.	26.5	21495.	40.7	10329.	92.5
Total	42107.	100.0	52875.	100.0	10768.	25.6

Source: ABAG Projections '79 data base.

FIGURE 14.5-B
RICHMOND
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

with the greatest decreases in heavy industry and food processing. The leading manufacturing employment classifications have consistently been heavy industry and metal fabrication equipment.

The basic non-manufacturing sector rose from fourth largest to the third largest employment sector over the 13 year period. From 1965 to 1978, long distance transportation decreased in employment by almost three-fourths. However, growth in federal government employment, with the bulk mail handling center and the social security office, and in wholesale trade more than offset the job losses in the non-manufacturing sector.

Retail trade and services experienced a growth of 19 percent over the 13 year period. It's share of the total jobs in the center declined one and a half percent. However, it remained the second largest employment sector in the Richmond center, with retail sales being the largest employment classification in the sector.

The other local-serving sector had the largest increase, 92 percent, in employment over the 13 year period. It also rose from third largest employment sector in 1965 to the largest employment sector in 1978. The shift can be attributed to increases in health services employment with the building of the Kaiser Medical Center. Almost 2,000 other local-serving jobs were also added in the local government classification.

14.5.3 Labor Force Commuting

In 1970, origin-destination data showed that 66 percent of those who worked in the Richmond employment center also resided there. The remaining 34 percent commuted from a variety of areas throughout the region. Ninety percent of this external commute came from elsewhere in Contra Costa County, the East Bay plain north of Fremont, dispersed locations in Solano, Napa, and Marin Counties, southern Sonoma County, and San Francisco (10). (Figure 14.5-C)

Richmond's population has declined from 79,040 in 1970 to 68,300 in 1979, the most recent estimate (2). This represents a 14 percent decrease in population, compared with a 26 percent increase in total jobs between 1965 and 1978. Although this employment increase may be considered moderate compared to that for other employment centers, the employment growth rate becomes more significant when compared with the negative growth rate for population, indicating that more workers reside outside than inside this employment center's boundary.

Increased government employment since 1970 and increased business and institutional services employment has probably increased the number of in-commuters. The loss of manufacturing jobs outlined in the industrial structure section has been correlated with high unemployment by Richmond local planners, and may also serve to decrease the number of workers residing in this center. However, increased local-serving employment may add entry level skilled and semi-skilled employment opportunities which may offset the manufacturing employment trend.

FIGURE 14.5-C

RICHMOND COMMUTE AREAS



14.6 VALLEJO-MARTINEZ

14.6.1 Introduction

The Vallejo-Martinez employment center (Figure 14.6-A) is primarily a basic non-manufacturing and other local-serving employment center. In 1978, 70 percent of the jobs in this center were in these two sectors. Within the basic non-manufacturing sector, federal and state government was the largest employment classification, while the Mare Island Naval Shipyard was the single largest employer of civilian workers. Federally funded public-service employment programs also brought new jobs in the federal and state government classification. The outlook for federal and state government employment is expected to remain relatively stable.

In the other local-serving employment sector, local government and health services employed the most people. Kaiser Hospital and the school district were Vallejo's major employers, apart from Mare Island. In Martinez, the Contra Costa County government seat, 6,000 people were employed in local government, with its community college district, the Veteran's Hospital, and other health services also providing many jobs. Benicia employed at least 2,000 people in its school district.

Both basic manufacturing and retail trade and services experienced growth between 1975 and 1978. Small businesses are spread throughout the center. Numerous refineries, both oil and sugar, are located along the Carquinez Straits. Deep-water access at Vallejo and Benicia allows for shipment of raw materials important to the manufacturing sector. The 2,000 acre industrial park in Benicia accounts for most of the manufacturing in this center.

Interstate 80, a major route in northern California, runs through Vallejo. There is easy access to I-80 from Benicia via Highways 680 or 21, and Highways 4 or 24 provide access from Martinez. Major rail facilities provide rail service to the rest of the East Bay and the Central Valley.

14.6.2 Industrial Structure

The Vallejo-Martinez employment center accounted for almost two and a half percent of the region's total employment in 1978, while its share of regional basic employment in 1978 was also over two percent. Its share of total employment growth in the region over the 1965 to 1978 period was about three percent, while its share of the regional basic employment growth over this period was a little over one percent.

Between 1965 and 1978, growth in the other local-serving employment sector was substantial, over 114 percent, while retail trade and services employment grew at the moderate rate of 24 percent. The basic non-manufacturing and manufacturing sectors employment grew at only 18 percent and 16 percent, respectively (Table 14.6-1).

There were minor shifts in the shares of total employment held by each sector over the 13 year period. In 1965, the basic non-manufacturing

VALLEJO—MARTINEZ EMPLOYMENT CENTER



employment sector had the largest share of total jobs in the center, 40 percent. By 1978, this sector lost over six percent of its share of employees and fell to the second largest employment sector. Since 1965, federal and state government had consistently been the largest employment classification in this center. The decline in federal government employment between 1965 and 1970, largely due to federal layoffs, early retirements, and hiring freezes at Mare Island around 1968, was responsible for this sector's relative loss of its share of employment, even though state employment continued to grow.

The other local-serving sector increased its share of total employment by 14 percent between 1965 and 1978, to become the largest employer in the center. Local government grew rapidly during the 1965 to 1970 years due largely to public schools and community college expansion. The real estate industry also contributed to the growth of this sector.

The retail trade and services sector maintained its share of total employment during the 1965 to 1978 period. There was substantial growth in the retail trade employment classification which retained its position as the third largest employment classification throughout the 13 year period. Retail services experienced some loss in employment over the 13 year period.

Basic manufacturing has had the lowest share of total employment since 1965. Heavy industry, and oil (mostly refineries) grew substantially from 1965 to 1970, but contracted back almost to 1965 levels between 1970 and 1975. Similarly, metal fabrication, machinery, and transportation equipment also grew from 1965 to 1970, and lost these gains during 1970 to 1975. Food processing has consistently lost employment since 1965.

14.6.3 Labor Force Commuting

In 1970, 51 percent of the people employed in the Vallejo-Martinez employment center also lived there. Of the remaining 49 percent of the people employed in this center, 90 percent commuted to the center from the area designated in Figure 14.6-C by the outer commute ring.

The Vallejo-Martinez employment center is an older urban area which has experienced slow expansion. Its 1975 housing costs ranked below the median value of homes for the San Francisco Bay Area (1). Employment opportunities are limited and are generally in the government, services, military, heavy industry, and food processing classifications.

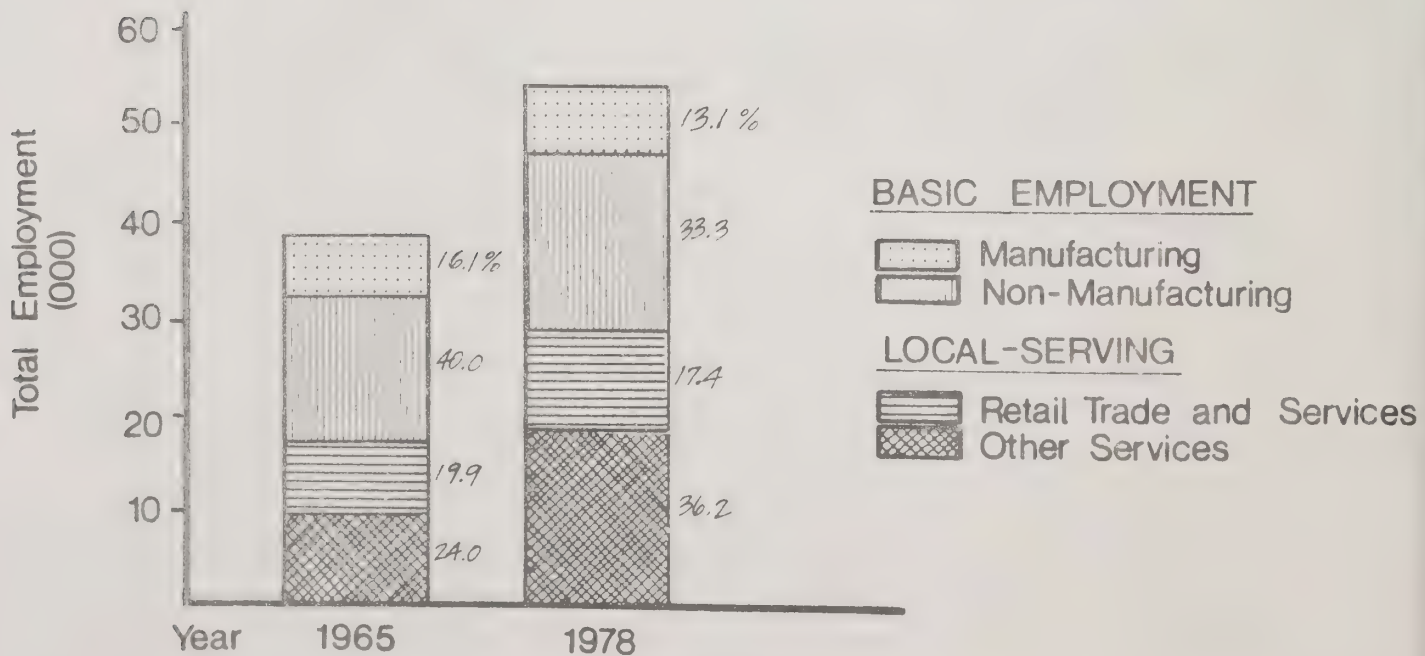
Accessibility and housing valued below the median for the Bay Area are the key determinants of the 90 percent commute area. The Solano County cities of Dixon, Fairfield, Vacaville, and Suisun City offer such housing, and I-80 provides easy access to the Vallejo-Martinez-Benicia area. Many other commuters come from the accessible northern Contra Costa County cities of Richmond, Crockett, Antioch, Benicia, and Pittsburg, where housing prices are close to those in Vallejo. A few commuters also come from northern Alameda County and the larger cities of Sonoma and Napa Counties.

TABLE 14.6-1
VALLEJO-MARTINEZ ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	6053.	16.1	7025.	13.1	972.	16.1
Basic Non-Manufacturing	15082.	40.0	17846.	33.3	2764.	18.3
Retail Trade and Services	7507.	19.9	9311.	17.4	1804.	24.0
Other Local-Serving	9022.	24.0	19379.	36.2	10357.	114.8
Total	37664.	100.0	53560.	100.0	15896.	42.2

Source: ABAG Projections '79 data base.

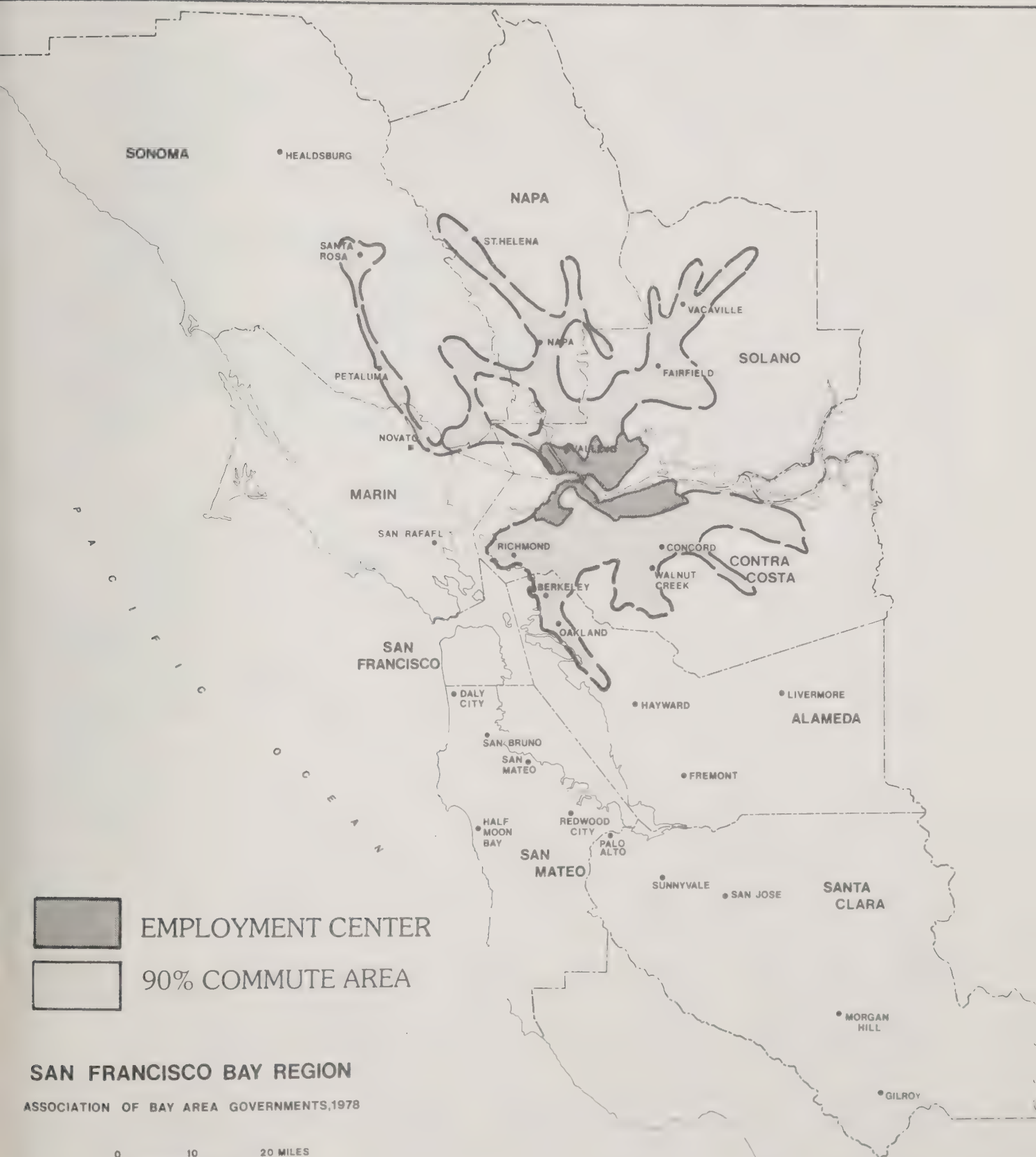
FIGURE 14.6-B
VALLEJO-MARTINEZ
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

FIGURE 14.6-C

VALLEJO — MARTINEZ COMMUTE AREAS



SAN FRANCISCO BAY REGION

ASSOCIATION OF BAY AREA GOVERNMENTS, 1978

14.7 PITTSBURG-ANTIOCH

14.7.1 Introduction

The Pittsburg-Antioch employment center (Figure 16.7-A) has historically functioned as a manufacturing center. In recent years, local services have provided an increasing share of jobs while basic manufacturing employment has declined. The largest industrial employers in this area are U.S. Steel, Crown Zellerbach, Dow Chemical, and Dupont. Existing and planned industrial areas are located south of Highway 4 and along the Suisun Bay.

Major retail shopping areas include the downtown commercial centers in each city and the East County Mall. Pittsburg's downtown area is presently being revitalized.

The major highway serving this employment center is Highway 4 which links this center to I-680 in Martinez and I-80 north of Richmond. I-680 and I-80 in turn provide access to central Contra Costa County, Solano County, and the urbanized East Bay. Regional transit service is provided by A-C transit, a BART feeder service, and Greyhound.

14.7.2 Industrial Structure

In 1978, the Pittsburg-Antioch employment center's share of the region's total employment was one percent, while its share of the region's basic employment was just under one percent. Over the 1965 to 1978 period, this employment center had almost one percent of the region's total employment growth, while its share of the region's basic employment growth decreased by one percent over this same period.

Growth in the basic non-manufacturing and other local-serving sectors doubled from 1965 to 1978 (Table 14.7-1). New jobs developed in retail trade and services. However, the basic manufacturing sector lost almost half of its employment.

There have been considerable shifts in each sector's share of total employment. Basic manufacturing accounted for over half of the total employment in the center in 1965. By 1978, manufacturing had lost 2,300 employees and had declined to the second largest employment sector in this center. These job losses were in heavy industry and food processing. However, heavy industry, largely chemical and paper plants, had consistently employed the largest number of people in this sector over the 1965 to 1978 period.

Retail trade and services, the second largest employment sector in the Pittsburg-Antioch center in 1965, declined to third largest by 1978. Although this sector drew new jobs during the 1965 to 1978 period, it was outpaced by the rapid growth in the other local-serving sector.

The other local-serving sector's rapid growth moved it from the third largest sector in 1965 to its position as the largest employment sector in this center in 1978. This was due to a gain of 1,400 new

FIGURE 14.7-A

PITTSBURG—ANTIOCH EMPLOYMENT CENTER

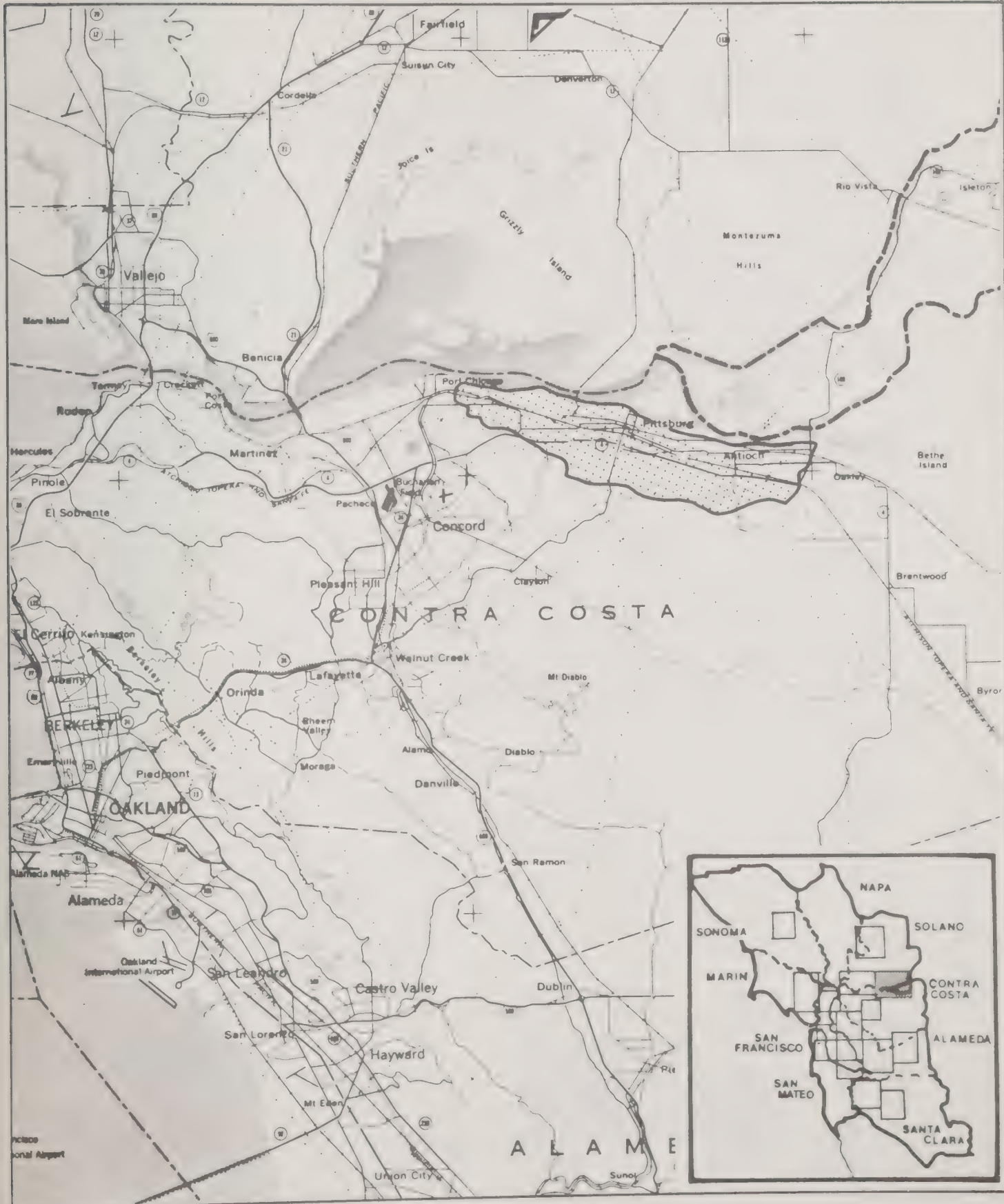
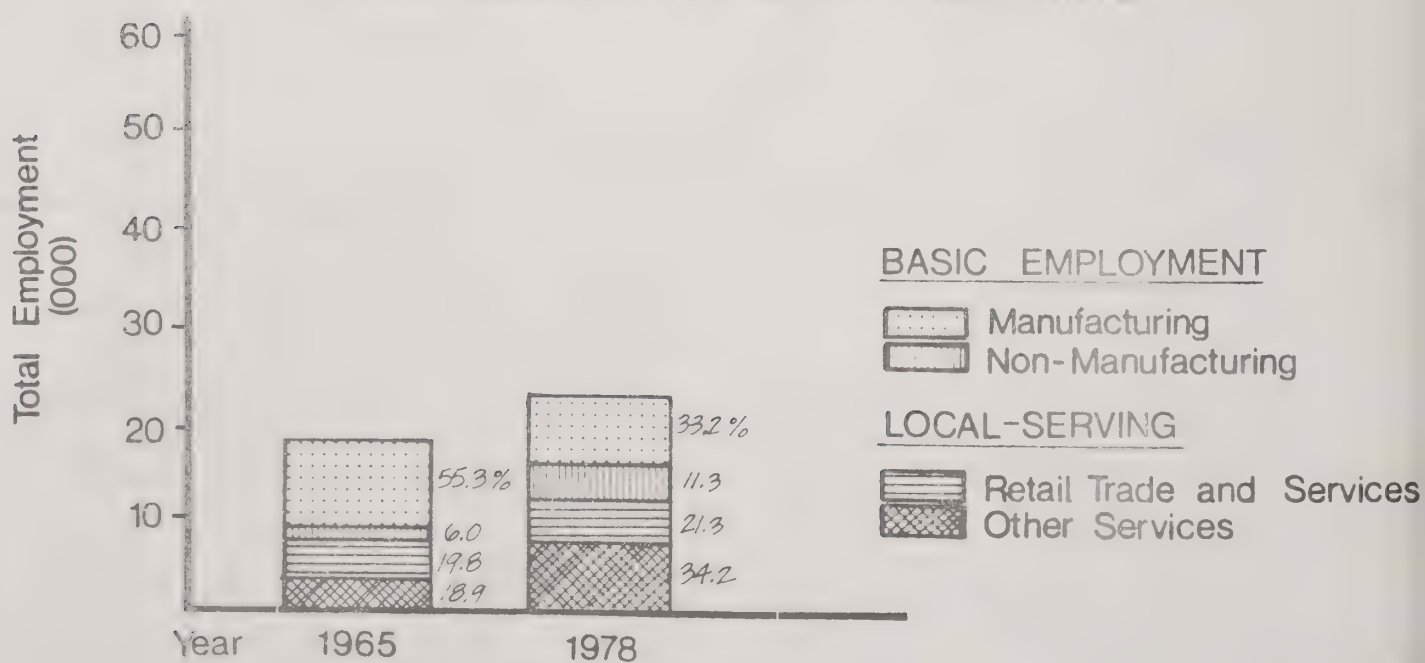


TABLE 14.7-1
PITTSBURG-ANTIOCH ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	10072.	55.3	7718.	33.2	-2354.	-23.4
Basic Non-Manufacturing	1088.	6.0	2625.	11.3	1537.	141.3
Retail Trade and Services	3614.	19.8	4969.	21.3	1355.	37.5
Other Local-Serving	3436.	18.9	7968.	34.2	4532.	131.9
Total	18218.	100.0	23280.	100.0	5070.	27.8

Source: ABAG Projections '79 data base.

FIGURE 14.7-B
PITTSBURG-ANTIOCH
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

local-serving jobs between 1965 and 1970, mostly in the local government, construction, and professional (health) services classifications.

The basic non-manufacturing sector, while growing rapidly over the 1965 to 1978 period, remained the fourth largest employment sector. The largest growth was in the wholesale trade, federal and state government, and institutional services classifications.

14.7.3 Labor Force Commuting

In 1970, origin-destination data indicated that 66 percent of all commute trips were within the employment center. Thirty-four percent of the commute trips originated from outside this area, 90 percent of which came from throughout Contra Costa County, southern Napa County, scattered locations in Solano County, and northern Alameda County (10). In Figure 14.7-C, the interior shaded area designates the Pittsburg-Antioch employment center, while the exterior ring designates the 90 percent commute area.

Between 1970 and 1975, growth in the number of people and households in this center exceeded that for the region as a whole. Since 1975, development pressures, especially around Antioch, have intensified. Between 1975 and 1979, Antioch's population has increased by 18 percent (1), with a much slower rate of employment growth. It appears that most new residents are commuting to work elsewhere. This trend is intensified by the loss of heavy industry since 1970. This employment category has historically been the largest employer in this center. In 1965, heavy industry accounted for over 42 percent of all jobs, more than three times the number of jobs provided in the next largest category (retail sales). This loss has resulted in increased unemployment locally and hence less internal commuting. Since there has been significant growth in the local-serving categories and growth in this sector tends to occur in response to population growth, local-serving growth may partially compensate for the loss of heavy industry employment by providing jobs for local residents. However, in view of the lack of growth in other categories and of rapid population growth, the net effect on commuting is likely to be that fewer residents will both live and work within this employment center.

FIGURE 14.7-C

PITTSBURG — ANTIOCH COMMUTE AREAS



14.8 EAST BAY

14.8.1 Introduction

The East Bay employment center (Figure 14.8-A) consists of commercial and industrial areas in Berkeley, Oakland, Alameda, and San Leandro. Industrial activities are generally located near the Bay. South Shore, Bay Fair, and Eastmont are major shopping centers. Central business districts in all of the East Bay cities and commercial uses along major thoroughfares such as Telegraph Avenue and East 14th Street account for the majority of the East Bay's commercial activities.

The largest employers in the area are the University of California and the Lawrence Berkeley Laboratory. Major corporate headquarters include Kaiser Aluminum and Chemical, Kaiser Industries, Clorox, and Rucher. All are located in Oakland.

Employment opportunities in this area are diversified. Basic non-manufacturing industry provides the greatest number of jobs and within this sector, long-distance transportation has shown the greatest growth over the past ten years, emphasizing the importance of port-and airport-related industrial activities in this employment center. With facilities to handle a large volume of containerized cargo, the Port of Oakland is now the largest port facility in the region in terms of total tonnage shipped, excluding petroleum.

The East Bay is accessible to most other areas in the region. Highway 17 is the major north-south artery connecting this employment center with Richmond to the north and southern Alameda County and Santa Clara County to the south. Interstate 80 provides access to San Francisco to the west and to Contra Costa County, Solano County and Sacramento to the east. Interstate 580 and Highway 24 also provide access to outlying areas. Transit service is provided by BART and A-C Transit, which together cover a service area including Alameda, Contra Costa, and San Francisco Counties.

Air transportation (both freight and passenger) is available from Oakland. As noted above, the Port of Oakland is the region's largest water transportation facility, for general cargo; excluding petroleum. Rail service for freight is operated by Southern Pacific, while Amtrak operates a limited passenger service.

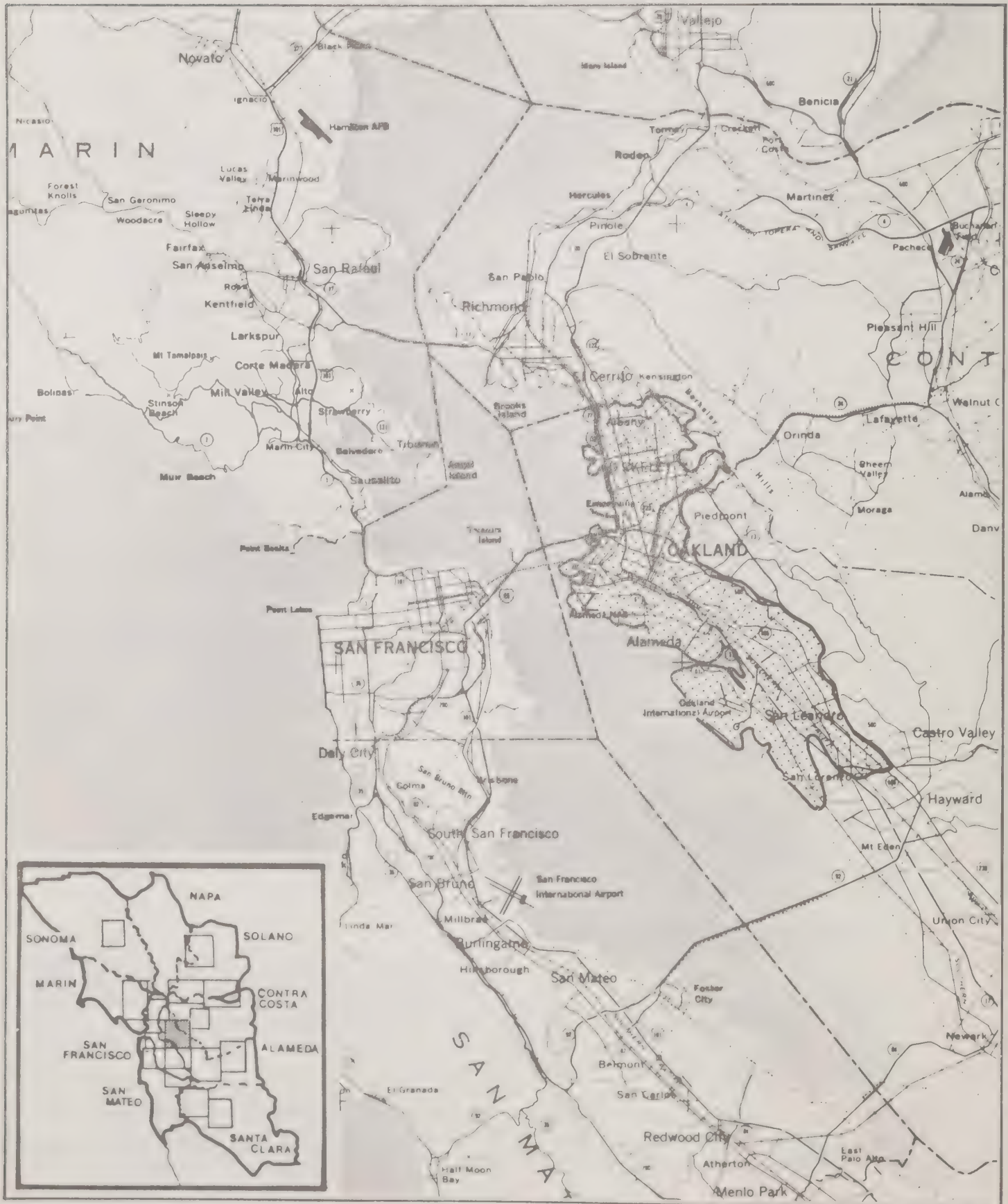
14.8.2 Industrial Structure

The East Bay employment center accounted for 15 percent of the total regional employment in 1978. In the same year it had 15 percent of the region's basic employment. This center received seven percent of the region's total employment growth and two percent of regional basic employment growth over the 1965 to 1978 period.

Almost all growth has been in the other local-serving employment sector. The basic non-manufacturing sector gained some new jobs. Together, the basic manufacturing and retail trade and services sectors lost as much

FIGURE 14.8-A

EAST BAY EMPLOYMENT CENTER



employment as the basic non-manufacturing sector gained over the 13 year period.

From 1965 to 1978 there were considerable shifts in sector shares of total employment (Table 14.8-1). Even though the non-manufacturing basic sector had gained 8,800 jobs by 1978, it could not keep up with the rapidly growing other local-serving sector. Thus, it dropped from the largest to the second largest employment sector during the 13 year period. Most growth in this sector occurred in the federal and state government classification. Jobs were also added in the wholesale trade, finance and insurance, and business services classifications.

Retail trade and services went from the second largest employment sector in 1965 to fourth largest employment sector in 1978. This sector lost a considerable number of jobs in retail stores, especially from 1975 to 1978.

Basic manufacturing lost employment from 1965 to 1975. However, it gained back its employment losses over the 1975 to 1978 years, so that by 1978 it had regained its 1965 position as the third largest employment sector in the East Bay center. The largest employment loss in manufacturing was in the food processing classification. Losses in heavy industry have been offset with recent industrial development around the Oakland International Airport and expansion of the Port of Oakland.

The other local-serving sector had the largest shift in its share of total employment over the 13 year period. In 1965 it had the lowest share of total employment, but by 1978, it employed more people than any other sector in the East Bay center. This was due to growth in several classifications: local government; professional (health, legal, educational); services transportation, communications, and utility services; and finance, insurance, and real estate.

14.8.3 Labor Force Commuting

In 1970, 56 percent of the people working in the East Bay employment center also lived there. Ninety percent of the remaining 44 percent came from areas throughout the northern and east bay counties, and from San Francisco (10). Figure 14.8-C shows the employment center (shaded area) and the 90 percent commute area (outer ring).

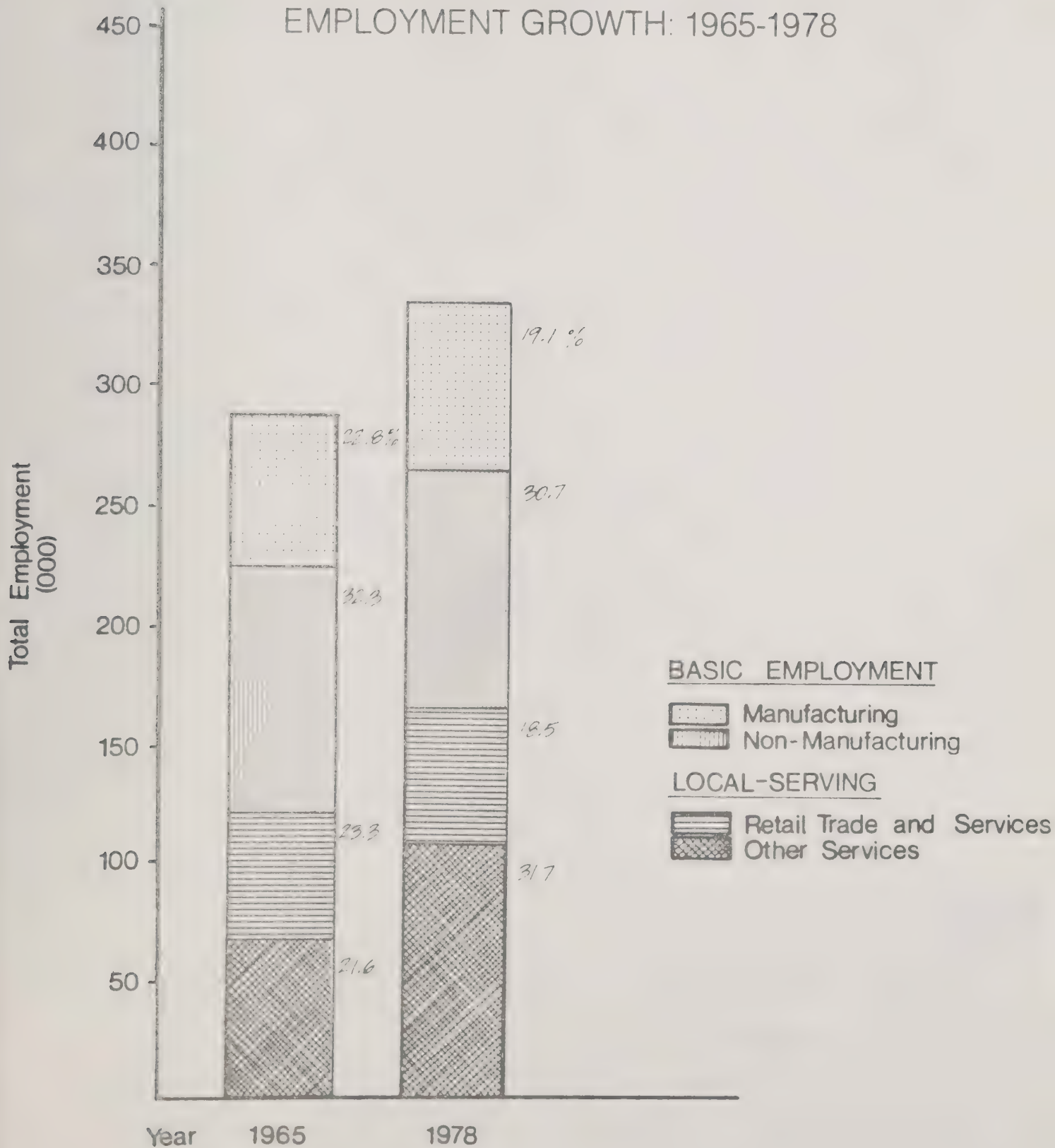
The East Bay employment center is the second largest in the region. It offers a large variety of jobs, from heavy industry, transportation, and government to numerous community colleges and universities. This is an established area where the number of housing units has increased by only 5.5 percent, slower than the regional increase of 16.4 percent. However, housing costs have increased by 77 percent in this center, faster than the regional increase of 62.7. percent (1). Adequate transportation makes it possible for people to work in this employment center while living in an area where they can better afford the housing costs.

TABLE 14.8-1
EAST BAY ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	EmPLY. Change	Percent Change
Basic Manufacturing	65425.	22.8	63082.	19.1	-2343.	-3.6
Basic Non-Manufacturing	92697.	32.3	101517.	30.7	8820.	9.5
Retail Trade and Services	66808.	23.3	61230.	18.5	-5578.	-8.3
Other Local-Serving	61824.	21.6	104591.	31.7	42767.	69.2
Total	286754.	100.0	330419.	100.0	43665.	15.2

Source: ABAG Projections '79 data base.

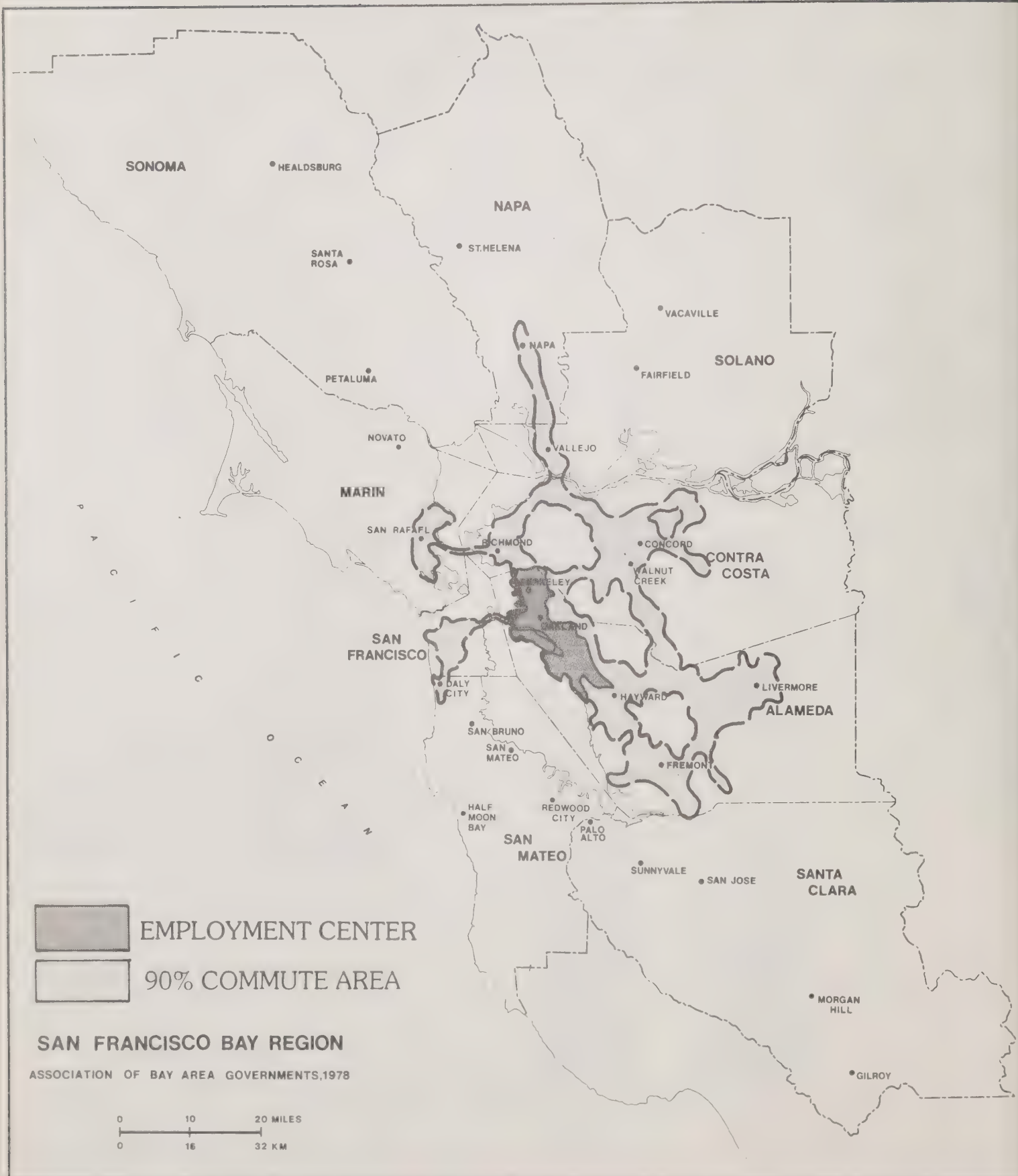
FIGURE 14.8-B
EAST BAY
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

FIGURE 14.8-C

EAST BAY COMMUTE AREAS



The 90 percent commute area for the East Bay employment center extends throughout the Bay Area counties. Commuters travel from several areas of San Francisco: the Marina, the Western Addition, the outer Mission, and Twin Peaks. Marin County commuters come from San Rafael and Mill Valley, and residents of the cities of Vallejo and Napa also work in this employment center. The largest number of commuters come from the western parts of Contra Costa County.

14.9 WALNUT CREEK-CONCORD

14.9.1 Introduction

The Walnut Creek-Concord employment center (Figure 14.9-A) serves as a major suburban retail center in central Contra Costa County. The Sun Valley and Concord Shopping Centers in Concord, the Contra Costa Center in Pleasant Hill, and the Broadway Plaza in Walnut Creek are some of its major retail centers (9). The accessibility of these and other major commercial uses, the rapid rate of residential growth, and the relative affluence of the population are all key factors supporting the growth of retail trade and services. The center is also experiencing pressure to support substantial new office growth.

The suitability of this area for office development relates to several locational factors: 1) the area has an abundance of highly skilled residents who are employed in professional and managerial jobs and further housing expansion is planned; 2) Walnut Creek-Concord is within one and a half hour's drive of San Francisco, Oakland, San Jose, and Sacramento which are all major office/administrative centers; 3) the cost of office space is generally less than in major centers; and 4) garden office and midrise office buildings are viewed as offering a more pleasant working environment.

Major commercial uses in this employment center are dispersed along I-680, in the downtown Walnut Creek area near the I-680/Highway 24 interchange, and on major arteries. Business and industrial park development occurs throughout the center, with a major concentration in North Concord near Buchanan Field. Office development is dispersed throughout Concord, Walnut Creek, and Pleasant Hill. About 2,000,000 square feet of office space is planned for construction from 1979 to 1981.

The highway system in central Contra Costa County makes this area highly accessible to the major cities of the region (San Francisco, Oakland, and San Jose), to the urbanized East Bay, and to Sacramento. Interstate 680 is the major north-south artery connecting the area with San Jose to the south, Solano County to the north, and with Sacramento via I-80. Highway 24 joins I-680 in Walnut Creek and provides access to Oakland and San Francisco via the Bay Bridge. Interstate 580, links with I-680 in Pleasanton providing access to the Livermore Valley and Hayward and Oakland to the west. Highway 4 intersects with I-580 linking the Central Contra Costa County area to Richmond (west) and with the Antioch-Pittsburg area (north-east). BART provides regional transit service to Walnut Creek, Pleasant Hill, and Concord. Direct service is available to downtown Oakland and San Francisco, and, by transfer, to East Bay communities north to Richmond and south to Fremont.

14.9.2 Industrial Structure

The Walnut Creek-Concord employment center held almost three percent of the region's total employment and a little over one percent of the regions basic employment in 1978. Over the 1965 to 1978 period, this

WALNUT CREEK—CONCORD EMPLOYMENT CENTER



center received five percent of the total employment growth in the region. It also received a little over three percent of the region's basic employment growth over the same period.

As shown in Table 14.9-1, the Walnut Creek-Concord employment center is primarily a local-serving activity center. Between 1965 and 1978, retail sales and services and other local-serving employment decreased from 84 percent to 77 percent of total employment. Nevertheless, employment numbers in these sectors nearly doubled during this period. Basic manufacturing and basic non-manufacturing employment accounted for over 22 percent of total employment in 1978, up from 16 percent in 1965.

Within these four general employment sectors, all the specific employment classifications experienced employment increases. In basic manufacturing, the following job categories increased by more than 100 percent between 1965 and 1978: heavy industry, metal fabrication, and miscellaneous manufacturing. In 1978, the heavy industry classification (paper, petroleum, chemicals, etc.) had the highest share of total employment.

In the basic non-manufacturing employment sector, federal and state government showed the largest increase in its share of total employment. Other employment classifications with increases of over 1,000 new jobs included wholesale trade, and business and institutional services. Because of employment growth between 1965 and 1978, federal and state government was the largest basic non-manufacturing employer in 1978.

The growth in the other local-serving sector was attributable to increases in both professional (health, legal, educational) services and in a miscellaneous category which includes construction, transportation, communication, electricity, banking, credit, insurance, and local government. In the retail trade and services sectors, retail service employment, including hotels, personal services, automobile repairs, motion pictures, and amusement, grew at a faster rate than retail trade. In spite of this increase in retail services, retail trade retained its position as the largest local-serving employment category.

14.9.3 Labor Force Commuting

In 1970, origin-destination data showed that 66 percent of all home to work trips were from within the Walnut Creek-Concord employment center (10). Of the 34 percent commute trips originating outside the employment center, 90 percent came from Napa, Solano, the Livermore Valley, the East Bay, and most of the remaining portions of Contra Costa County. Figure 14.9-C shows areas which were the origin of 90 percent of the external commute trips, while the employment center is shown in the internal shaded area.

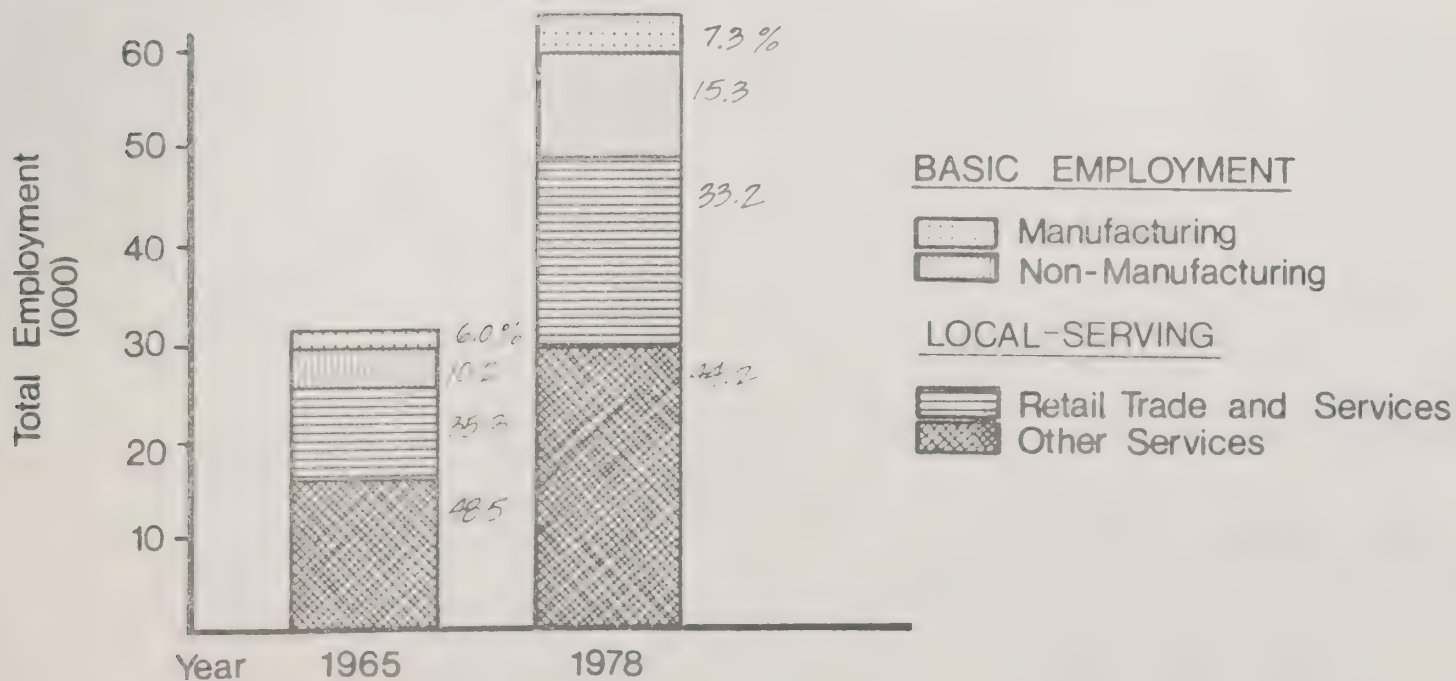
The data above reflect the accessibility of the employment center via highway facilities. In terms of travel time, areas in east Contra Costa County, Napa County, the Suisun-Fairfield area, and Oakland and Hayward, are those farthest from the employment center. Peak-hour travel times exceed 40 minutes from the most distant areas compared with 20 minutes from some areas within the employment center.

TABLE 14.9-1
WALNUT CREEK-CONCORD ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	1933.	6.0	4765.	7.3	2832.	146.5
Basic Non-Manufacturing	3256.	10.2	9904.	15.3	6648.	204.2
Retail Trade and Services	11269.	35.3	21514.	33.2	10245.	90.9
Other Local-Serving	15493.	48.5	28651.	44.2	13158.	84.9
Total	31951.	100.0	64834.	100.0	32883.	102.9

Source: ABAG Projections '79 data base.

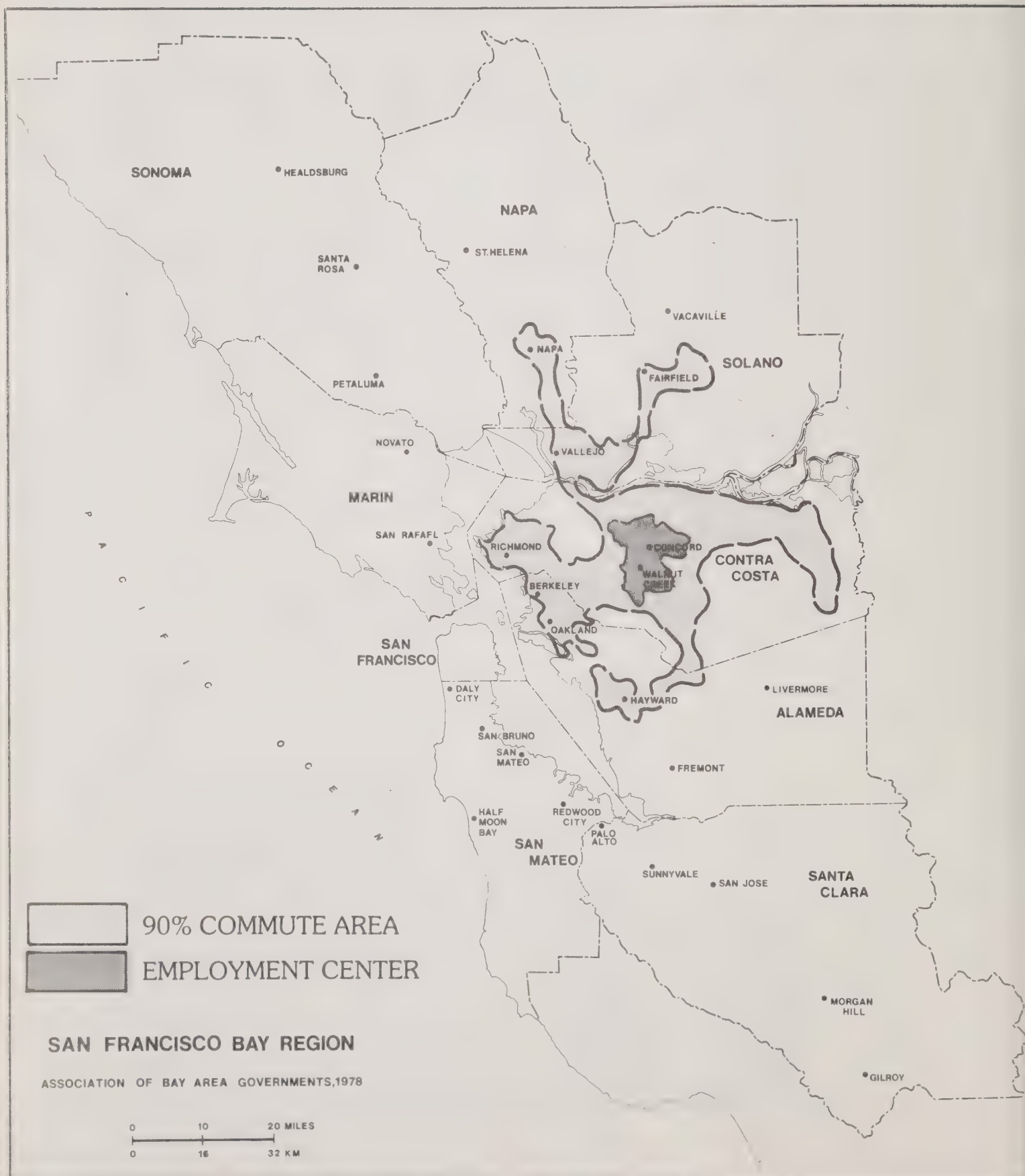
FIGURE 14.9-B
WALNUT CREEK-CONCORD
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

FIGURE 14.9-C

WALNUT CREEK — CONCORD COMMUTE AREAS



It is interesting to note that in 1970, 50 percent of the work trips originating outside the employment center were from central Contra Costa County. Together with those trips internal to the employment center, over 80 percent of the work force was employed locally in 1970. If employment growth trends continue, with the retail trade and services sector providing the most jobs and increasing its share relative to other industrial groupings, the percentage of employees residing close to work may decrease because the cost of housing may exceed that affordable by most retail sales and service employees. On the other hand, new office and industrial park development, with a large number of professional and managerial employees, may serve to maintain a high percentage of workers employed locally.

14.10 SAN FRANCISCO

14.10.1 Introduction

The basic non-manufacturing employment sector's share of the total employment in San Francisco is over 40 percent. The largest employers in this sector are the federal and state government and wholesale trade classifications. Since 1970, most growth has occurred in business services related to rapid increases in office developments and long-distance transportation. For example, 21 corporate headquarters listed in Fortune's top 1000 industrial and non-industrial corporations were located in San Francisco in 1978 (3).

The other local-serving sector is the second largest employment sector in San Francisco and has had the most rapid growth since 1965. Growth in this sector is also related to office development in San Francisco.

San Francisco is linked to the rest of the Bay Area by major highway, bridge, rail, and transit networks. Transit within San Francisco itself is also well developed.

14.10.2 Industrial Structure

The San Francisco employment center accounted for 19 percent of the total regional employment and 21 percent of the region's basic employment in 1978. Between the years 1965 and 1978, this center accounted for six percent of the total employment growth in the region and seven percent of the region's basic employment growth.

The basic non-manufacturing and other local-serving employment sectors have experienced increases both in their number of jobs and in their shares of total employment since 1965. Basic non-manufacturing employment was the largest employment sector of the San Francisco employment center throughout the 13 year period (Table 14.10-1). Within this category, business services showed the largest employment increase (almost 12,000 jobs). Other employment categories showing increases were long-distance transportation, finance and insurance, and institutional services. Employment decreased in wholesale trade and federal and state government. In 1965, finance and insurance was the largest employer. By 1978 it dropped to second largest, behind federal and state government.

In the other local-serving sector, the professional (health, legal, educational) services classification increased by almost 28,000 jobs between 1965 and 1978.

In the basic manufacturing employment sector, all categories showed less employment in 1978 than in 1965. In high-technology manufacturing the drop was insignificant, but in other categories (printing and publishing, heavy industry, food processing, metal fabrication, miscellaneous manufacturing) employment losses were more substantial. Between 1965 and 1978 the largest employment loss was almost 5,000 jobs in food processing.

SAN FRANCISCO EMPLOYMENT CENTER



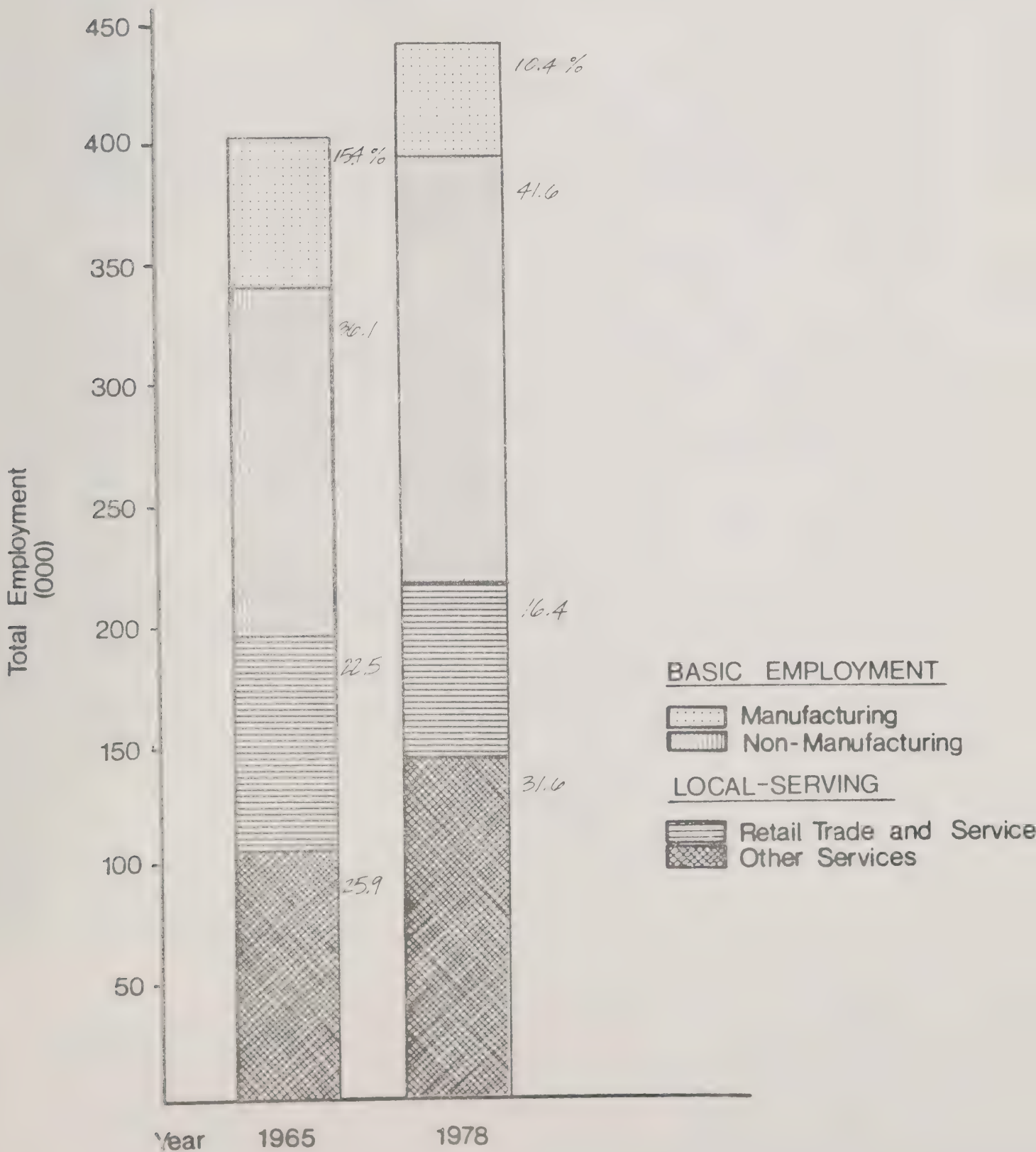
TABLE 14.10-1

SAN FRANCISCO ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	EmPLY. Change	Percent Change
Basic Manufacturing	61863.	15.4	45895.	10.4	-15968.	-25.8
Basic Non-Manufacturing	144834.	36.1	182944.	41.6	38110.	26.3
Retail Trade and Services	90235.	22.5	71978.	16.4	-18257.	-20.2
Other Local-Serving	103910.	25.9	139013.	31.6	35103.	33.8
Total	400842.	100.0	439830.	100.0	38988.	9.7

Source: ABAG Projections '79 data base.

FIGURE 14.10-B
SAN FRANCISCO
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

Retail trade and services jobs have also declined. Between 1965 and 1978 retail trade employment increased by 1,600 jobs in this employment center. At the same time there was a loss of more than 18,000 jobs in retail services employment which includes hotels, personal services, automobile repair, motion pictures, and amusement.

Whether the decrease in the retail trade and services sector represents an outflow from Francisco is uncertain. Retail areas in this employment center include the central business district, other downtown shopping areas and the Mission Street commercial area. While employment in these areas has declined, it appears to have increased in various San Francisco neighborhoods (e.g., Stonestown Shopping Center) in recent years. Hence, the drop in retail jobs may reflect a decentralization of retail activity in San Francisco rather than a real decline.

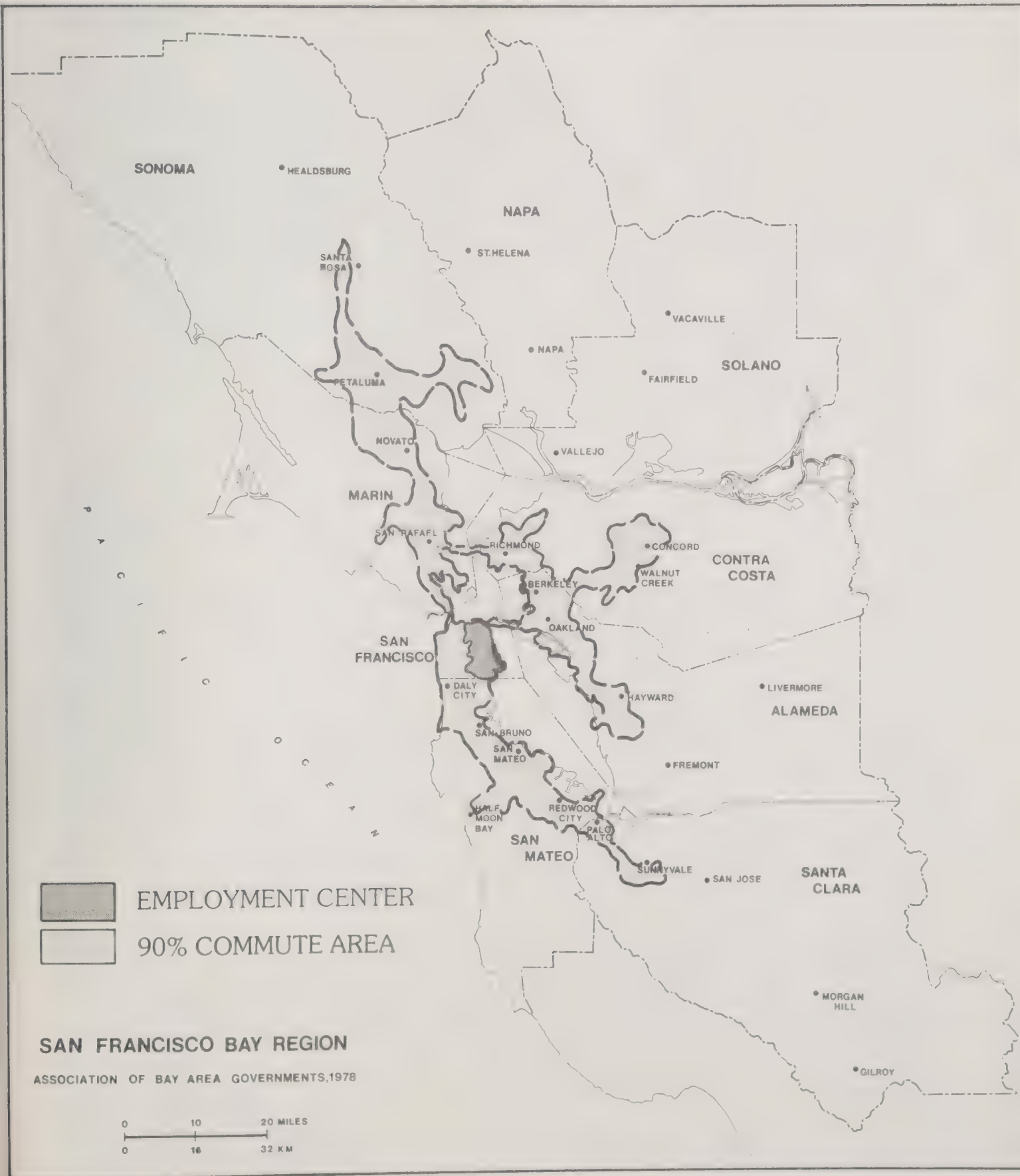
14.10.3 Labor Force Commuting

In 1970, only 36 percent of the people employed in the San Francisco employment center also lived there. The remaining 64 percent commuted from throughout the region (10). Of these, 90 percent commuted from the rest of San Francisco; most of San Mateo County; Sunnyvale and Palo Alto in Santa Clara County; the Highway 101 corridor in Marin County; Richmond, El Cerrito and out to the Walnut Creek-Concord area in Contra Costa County; and the Highway 17 corridor to Union City in Alameda County. This 90 percent commute area is indicated by the external ring in Figure 14.10-C; the internal shaded area is the San Francisco employment center.

While the number of jobs in some sectors has decreased, there has been an increase in the total number of jobs in the San Francisco employment center. At the same time, San Francisco's household population has decreased. Most vacant land has been consumed, though a small increase in housing units can be attributed to redevelopment (conversions, etc.) (1). Because this employment center cannot house as many people as it employs and because it offers a balanced mixture of basic and local-serving jobs, San Francisco exerts a strong demand for jobholders from throughout the region.

FIGURE 14.10-C

SAN FRANCISCO COMMUTE AREAS



14.11 HAYWARD-FREMONT

14.11.1 Introduction

The other local-serving employment sector is very important in the Hayward-Fremont employment center (Figure 14.11-A), accounting for almost 35 percent of total employment in 1978. However, more important in this center has been rapid growth since 1965 in the basic non-manufacturing employment sector. Long-distance transportation, wholesale trade, institutional services, and federal and state government employment classifications have more than doubled in the period 1965 to 1978. Warehousing and trucking, building suppliers, several colleges and California State University have accounted for about 9,500 new jobs in this center.

The Hayward-Fremont employment center is very accessible to the rest of the region. Highway 17 and I-580 (via Foothill/Mission Boulevards) provide north/south and east access. Route 92 via the San Mateo Bridge, and Route 84 via the Dumbarton Bridge, provide western access to the Peninsula. The extension of BART to Fremont has greatly improved commuting. Major rail lines also serve the Hayward-Fremont area.

There is great potential for employment growth in the Hayward-Fremont center. Many acres of land are available for both light and heavy industrial development.

14.11.2 Industrial Structure

The Hayward-Fremont employment center accounted for four percent of the total employment in the region and three percent of the region's basic employment in 1978. This center received six percent of the total employment growth and five percent of the basic employment growth experienced in the region over the 1965 to 1978 period.

From 1965 to 1978, the Hayward-Fremont employment center experienced steady growth in the number of jobs in all four major employment classifications (Table 14.11-1). Basic non-manufacturing employment grew by 165 percent between 1965 and 1978, increasing its share of total employment from 10 percent to 18 percent. While all classifications within the basic non-manufacturing sector increased their employment during the period 1965 to 1978, four categories, long-distance transportation, wholesale trade, institutional services, and federal and state government, had increases of more than 100 percent.

The other three sectors declined slightly in their share of total employment, although the number of jobs increased. In basic manufacturing, miscellaneous manufacturing was the only classification to increase by over 100 percent, with heavy industry also experiencing significant employment growth. However, over 1,400 food processing jobs were lost during this period, a decrease of about 36 percent.

FIGURE 14.11-A

HAYWARD — FREMONT EMPLOYMENT CENTER

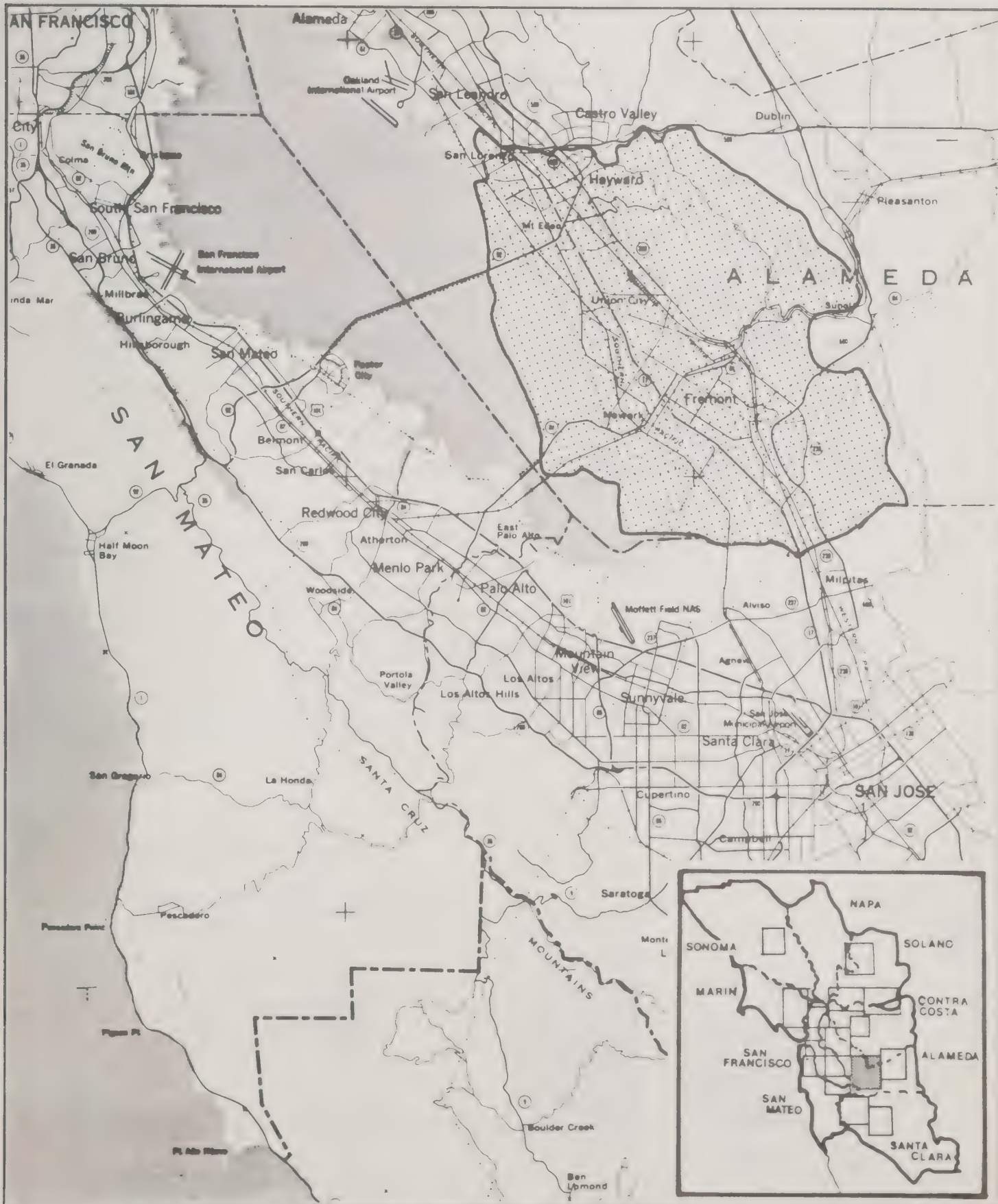
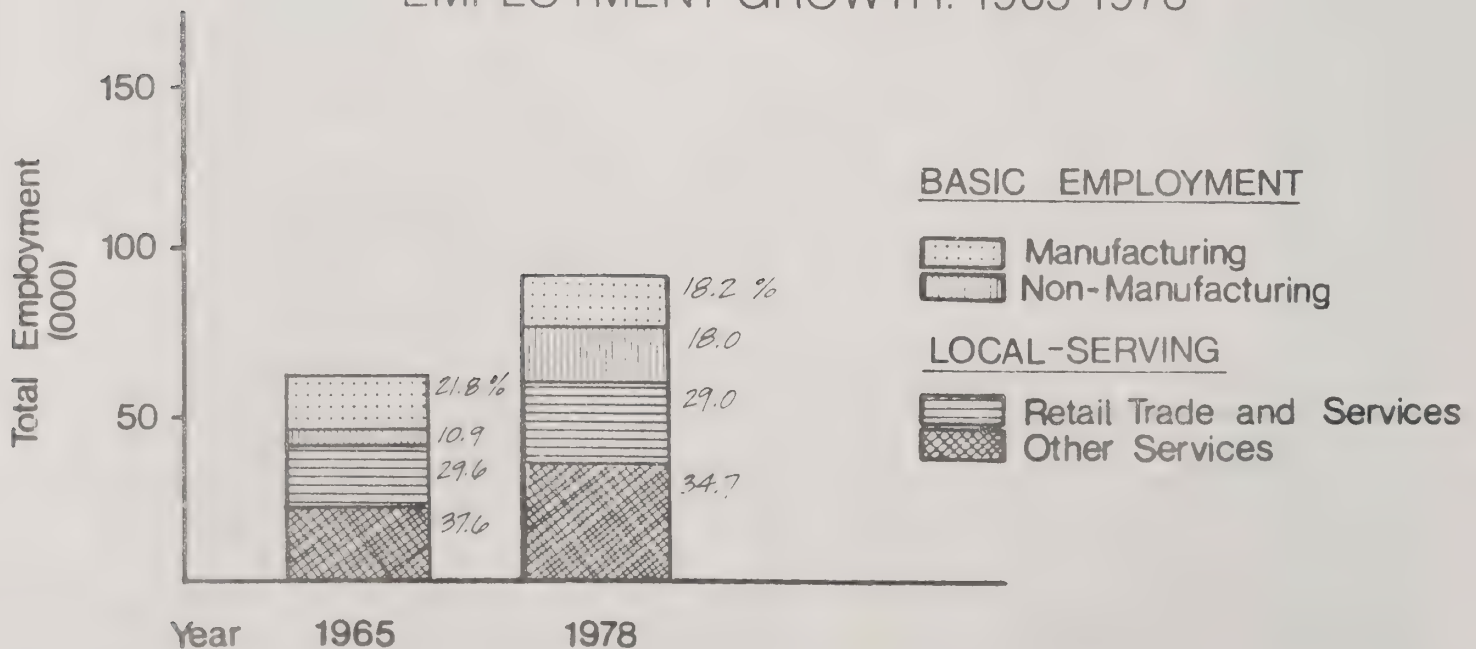


TABLE 14.11-1
HAYWARD-FREMONT ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	EmPLY. Change	Percent Change
Basic Manufacturing	12523.	21.8	16874.	18.2	4351.	34.7
Basic Non-Manufacturing	6288.	10.9	16702.	18.0	10414.	165.6
Retail Trade and Services	17030.	29.6	26870.	29.0	9840.	57.8
Other Local-Serving	21636.	37.6	32107.	34.7	10471.	48.4
Total	57477.	100.0	92554.	100.0	35077.	61.0

Source: ABAG Projections '79 data base.

FIGURE 14.11-B
HAYWARD-FREMONT
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

Employment in the retail trade and services sector increased by almost 10,000 jobs, with each category experiencing comparable percentage increases.

The other local-serving sector retained its position as the largest employment sector in this center, although there was a slight drop in professional (health, legal, educational) services employment.

14.11.3 Labor Force Commuting

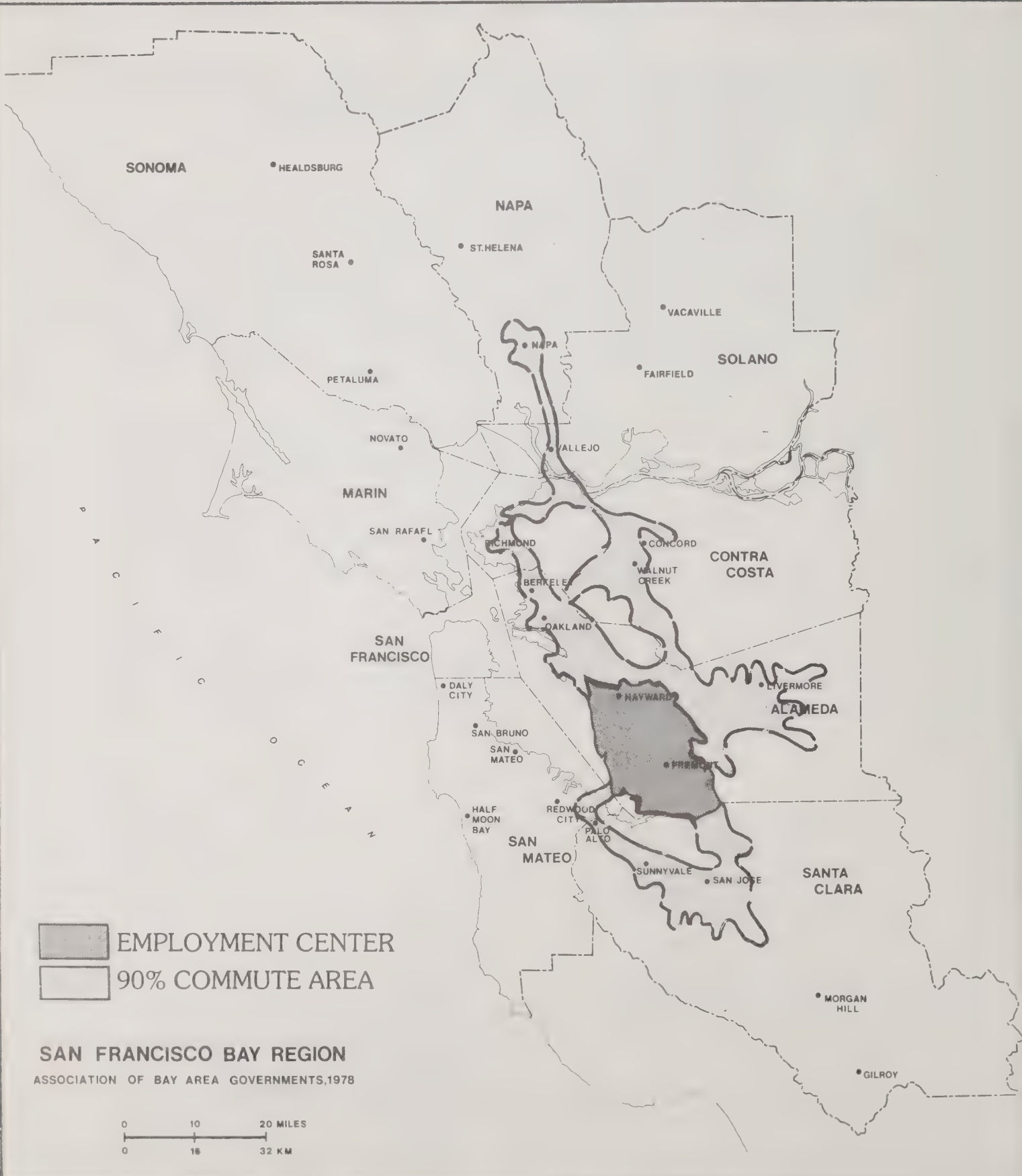
In 1970, origin-destination information showed that 66 percent of those who worked in the Hayward-Fremont employment center also lived there. The remaining 34 percent of the work force commuted from other areas (10). Ninety percent of the in-commuters came from elsewhere in Alameda County, throughout Contra Costa County, numerous locations in Santa Clara County, scattered spots along the bayside of San Mateo County, and as far north as the cities of Suisun and Napa. The 90 percent commute area is the exterior ring shown on Figure 14.11-C, while the employment center is designated by the internal shaded area.

Between 1970 and 1975, population growth exceeded employment growth in this center by 55 percent. In Fremont, population grew faster than jobs, while in Hayward, the reverse was true. Irrespective of the sector in which employment growth occurs, the number of people both working and living in Hayward seems to be decreasing. This trend will probably continue since the city is largely built-up and there are few opportunities to increase the supply of housing (1). With minimal population growth in Hayward, it is expected that the proportion of in-commuters will increase.

In Fremont, the type of job growth in relation to the cost of housing will determine whether workers reside locally. Also, the city's proximity to Hayward and Santa Clara, where job growth is occurring but housing is in short supply, means that employees from these areas also seek housing in Fremont.

FIGURE 14.11-C

HAYWARD — FREMONT COMMUTE AREAS



14.12 LIVERMORE

14.12.1 Introduction

This employment center (Figure 14.12-A) includes all of Livermore and the eastern part of Pleasanton. The largest employers are the Lawrence Livermore and Sandia Laboratories located east of Livermore. Other industrial uses are located along I-580 near the Livermore Airport and outside of the employment center along this highway in Pleasanton. There are no regional shopping centers in this area. The closest being located near the I-580/I-680 interchange, is under construction. The major commercial area in this employment center is downtown Livermore.

Major highways serve the area. Interstate 580 provides access to the urbanized East Bay and San Francisco to the west and the San Joaquin Valley to the east. Interstate 680 runs north and south, just west of the employment center, and connects Livermore with Santa Clara County to the south and with Contra Costa and Solano Counties to the north. Transit service is limited to the city of Livermore itself and to a BART feeder service operated by A-C Transit.

14.12.2 Industrial Structure

In 1978, the Livermore employment center had one percent of the region's total employment and a little over one percent of the region's basic employment. Over the 1965 to 1978 period this center received a little under two percent of the region's total employment growth and two percent of the region's basic employment growth.

There were steady increases in the number of jobs in all four general employment sectors between 1965 and 1978 (Table 14.12-1). The shares of total employment held by each sector have remained stable.

In both 1965 and 1978, basic non-manufacturing employment accounted for more than half of the total jobs. Three classifications had employment increases over 100 percent during this period; institutional services, wholesale trade, and long-distance transportation. The largest basic non-manufacturing employment classification in this employment center is institutional services, which includes the Lawrence Livermore and Sandia Laboratories. This category grew by 40 percent between 1965 and 1978, representing over 35 percent of total employment.

Basic manufacturing employment is small, both in numbers of jobs and its share of total employment. Between 1965 and 1978, heavy industry and miscellaneous manufacturing showed the greatest employment growth although this combined growth amounted to only about half the increase in long-distance transportation.

The other local-serving sector (including construction, transportation, communications, local government, professional services) accounted for more than one-fourth of all jobs in both 1965 and 1978. Growth in professional (health, legal, educational) services jobs offset a very slight decrease in other classifications in this sector. Both retail

This is a detailed map of the San Francisco Bay Area, specifically focusing on Alameda and Santa Clara counties. The map shows major cities like San Jose, Fremont, and Livermore, as well as highways and geographical features like the San Francisco Mountains. An inset map in the bottom right corner shows the broader regional context, including counties like Sonoma, Napa, and Contra Costa.

Geographical Features and Cities:

- Alameda County:** Livermore, Pleasanton, Fremont, Newark, Union City, Hayward, Castro Valley, San Ramon, Danville, Bethany.
- Santa Clara County:** San Jose, Sunnyvale, Cupertino, Santa Clara, San Jose Municipal Airport, Agnew, Alviso, Milpitas, East Palo Alto, Palo Alto, Mountain View, Los Altos, Los Altos Hills, Saratoga, Monte Sereno, Los Gatos, Chabota Park, New Almaden.
- Other Locations:** San Francisco, San Mateo, Contra Costa, Solano, Napa, Sonoma, Marin.

Highways: The map shows several major highways, including SR 88, SR 87, SR 86, SR 85, SR 84, SR 83, SR 82, SR 81, SR 80, SR 79, SR 78, SR 77, SR 76, SR 75, SR 74, SR 73, SR 72, SR 71, SR 70, SR 69, SR 68, SR 67, SR 66, SR 65, SR 64, SR 63, SR 62, SR 61, SR 60, SR 59, SR 58, SR 57, SR 56, SR 55, SR 54, SR 53, SR 52, SR 51, SR 50, SR 49, SR 48, SR 47, SR 46, SR 45, SR 44, SR 43, SR 42, SR 41, SR 40, SR 39, SR 38, SR 37, SR 36, SR 35, SR 34, SR 33, SR 32, SR 31, SR 30, SR 29, SR 28, SR 27, SR 26, SR 25, SR 24, SR 23, SR 22, SR 21, SR 20, SR 19, SR 18, SR 17, SR 16, SR 15, SR 14, SR 13, SR 12, SR 11, SR 10, SR 9, SR 8, SR 7, SR 6, SR 5, SR 4, SR 3, SR 2, SR 1.

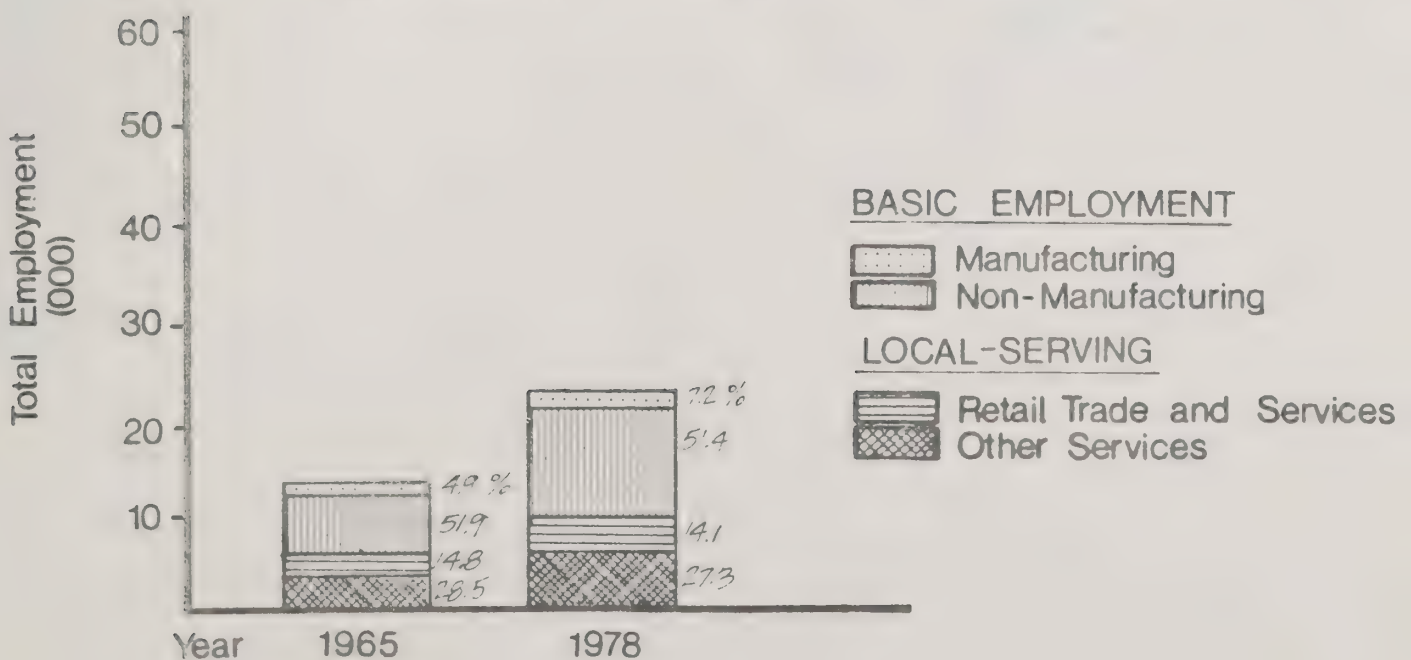
Inset Map: The inset map in the bottom right corner shows the broader regional context, including counties like Sonoma, Napa, and Contra Costa. It highlights the location of the main map area within the larger Bay Area.

TABLE 14.12-1
LIVERMORE ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	602.	4.9	1634.	7.2	1032.	171.4
Basic Non-Manufacturing	6443.	51.9	11708.	51.4	5265.	81.7
Retail Trade and Services	1831.	14.8	3218.	14.1	1387.	75.8
Other Local-Serving	3534.	28.5	6223.	27.3	2689.	76.1
Total	12410.	100.0	22783.	100.0	10373.	83.6

Source: ABAG Projections '79 data base.

FIGURE 14.12-B
LIVERMORE
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

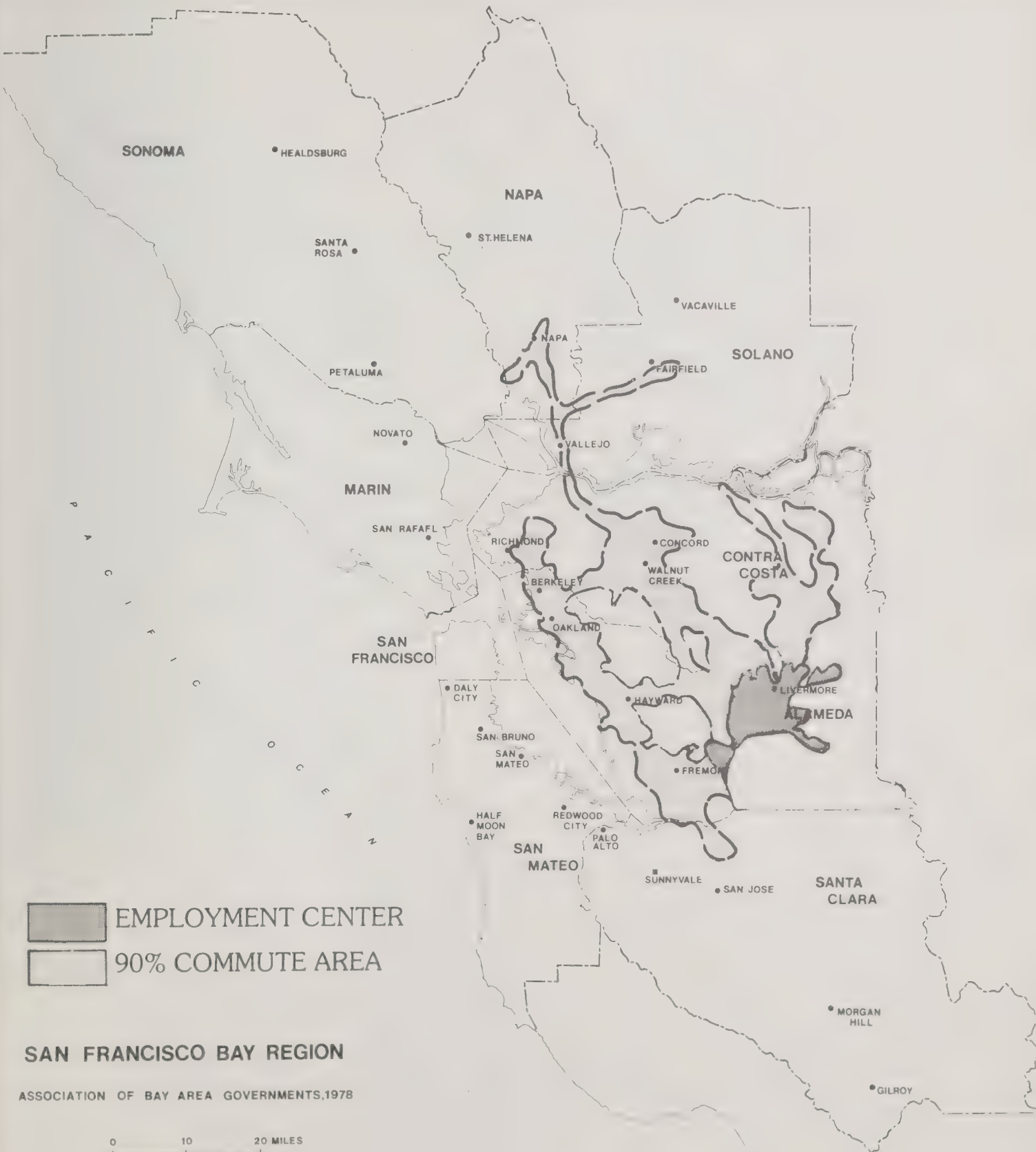
sales and services showed comparable increases, 110 percent and 80 percent, respectively, during this period.

14.12.3 Labor Force Commuting

In 1970, origin-destination data showed that 64 percent of the employees working in the Livermore employment center resided there. The remaining 36 percent commuted in from other areas (10). Ninety percent of the external commuters came from throughout Alameda and Contra Costa Counties and from scattered locations in Napa and Solano Counties. The 90 percent commute area is shown as the exterior ring in Figure 16.12-C, while the employment center itself is designated by the internal shaded area.

In the past few years, population growth has been limited due to the lack of available wastewater capacity and local planning policies (1). Between 1970 and 1975, job growth increased at twice the regional rate and indications are that this trend will continue. Total employment increased by 95 percent between 1975 and 1978, with the largest segment of the labor force employed in professional and managerial jobs. Given the cost of housing in the Livermore-Amador Valley, new construction may provide housing opportunities for employees with higher income levels, and this may serve to increase the number of people living and working in this area. At the same time, retail sales and services jobs are increasing and it is not clear that many retail employees could afford housing in this center. Hence, unless a significant number of retail employees are secondary wage earners this may lead to additional in-commuting.

FIGURE 14.12-C
**LIVERMORE
 COMMUTE AREAS**



14.13 SOUTH SAN FRANCISCO-SAN FRANCISCO INTERNATIONAL AIRPORT

14.13.1 Introduction

The major economic activities in the South San Francisco-San Francisco International Airport employment center are long-distance transportation, wholesale trade, hotels, motels, and restaurants; industries that benefit from the presence of San Francisco Airport. The airport is the largest air facility in the region and serves as this employment center's focal point. The largest employer in San Mateo County, United Airlines, is located in this center, as are other national and international air carriers (American, Pan Am, TWA). The airport area is all industrial land. There are other industrial areas in this employment center east of Highway 101.

Commercial areas in South San Francisco are located in the downtown area, at the Westborough Road/I-280 intersection, and at various locations along El Camino Real. The closest regional scale shopping centers are Serramonte and Tanforan along I-280 in Daly City and San Bruno, respectively.

Major highways serving this employment center include Highway 101 and I-280 which run north and south and connect this area with San Francisco, bayside San Mateo County communities, and Santa Clara County; El Camino Real (Highway 82) which is the major commercial thoroughfare running north and south on the Peninsula; and I-380 which runs east and west between I-280 and Highway 101 near the airport. SAMTRANS provides transit service to this employment center and the Southern Pacific Railroad provides passenger rail service between San Jose and San Francisco.

14.13.2 Industrial Structure

The South San Francisco-San Francisco International Airport employment center accounted for three and a half percent of the region's total employment and a little over four percent of the region's basic employment in 1978. Almost four and a half percent of the total employment growth and three percent of the region's basic employment growth, went to this center over the 1965 to 1978 period.

The South San Francisco-San Francisco Airport employment center experienced significant increases in the basic non-manufacturing and other local-serving employment sectors between 1965 and 1978 (Table 14.13-1). While the share of basic non-manufacturing jobs remained stable, the number of jobs in this sector increased by 40 percent. Other local-serving jobs increased from 13 percent of total employment in 1965 to 30 percent in 1978. The numerical increase was from 7,165 jobs in 1965 to 24,184 jobs in 1978, a 238 percent increase. During the same period, the basic manufacturing sector lost jobs and also declined in its share of total employment. The number of retail trade and services sector jobs increased slightly, but its share of total employment also dropped.

FIGURE 14.13-A

SOUTH SAN FRANCISCO SAN FRANCISCO AIRPORT EMPLOYMENT CENTER

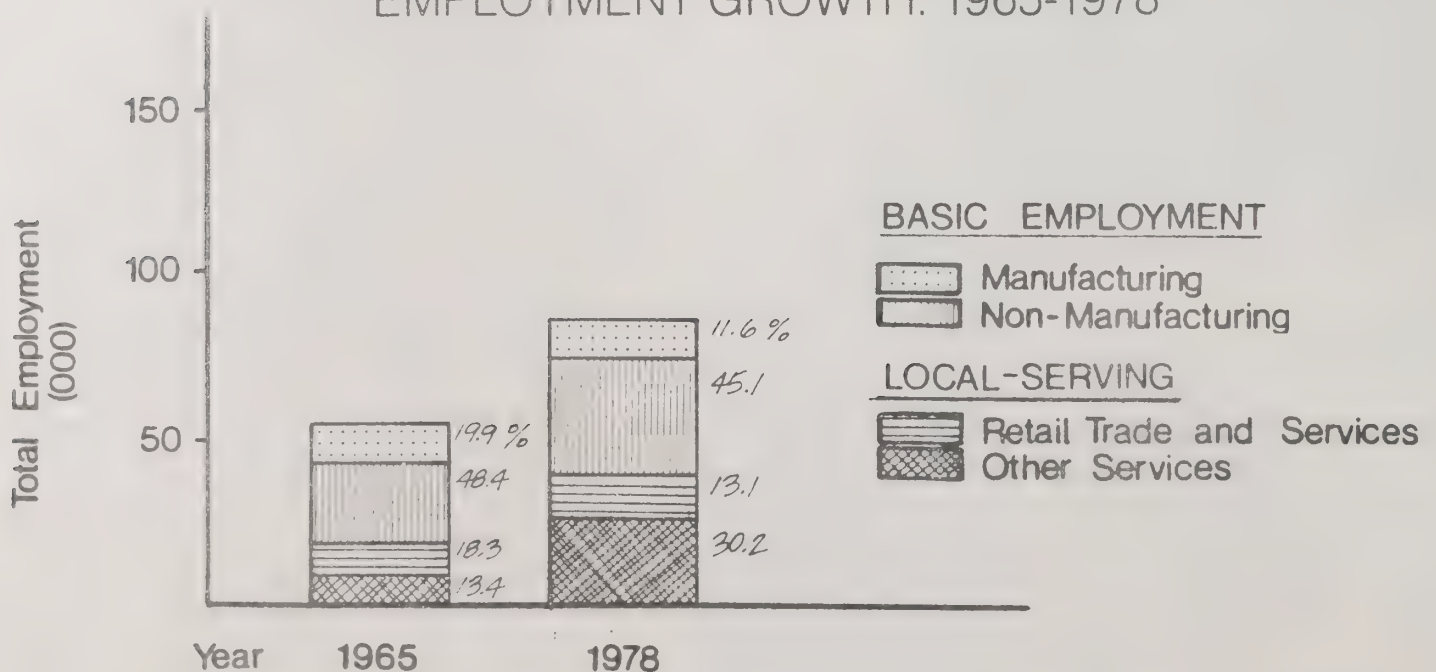


TABLE 14.13-1
SOUTH SAN FRANCISCO-
SAN FRANCISCO INTERNATIONAL AIRPORT
ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	10592.	19.9	9310.	11.6	-1282.	-12.1
Basic Non-Manufacturing	25835.	48.4	36108.	45.1	10273.	39.8
Retail Trade and Services	9767.	18.3	10499.	13.1	732.	7.5
Other Local-Serving	7165.	13.4	24184.	30.2	17019.	237.5
Total	53359.	100.0	80100.	100.0	26741.	50.1

Source: ABAG Projections '79 data base.

FIGURE 14.13-B
SOUTH SAN FRANCISCO-
SAN FRANCISCO INTERNATIONAL AIRPORT
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

Basic non-manufacturing employment increases were concentrated in three classifications: long-distance transportation, wholesale trade, and federal and state government. Long-distance transportation employment (at the airport) maintained its rank as the largest employment classification, providing almost 25 percent of total jobs in 1978, twice as many as any other industry. Wholesale trade maintained its standing as the second largest basic employment industry.

In the basic manufacturing sector, employment in food processing and heavy industry decreased by 2,000 jobs between 1965 and 1978. Metal fabrication, machinery, and transportation showed the biggest increase (1,200 jobs).

In the retail trade and services sector, retail trade jobs increased substantially, but barely offset the loss of retail service jobs. In the other local-serving sector, both the professional services and other (construction, transportation, communication, local government) local services classifications showed increases. The latter increased by over 11,000 jobs, increasing its share of total employment from over 9 percent in 1965 to almost 22 percent in 1978. At 22 percent, it was the second largest employment classification in this center (long-distance transportation ranking first).

14.13.3 Labor Force Commuting

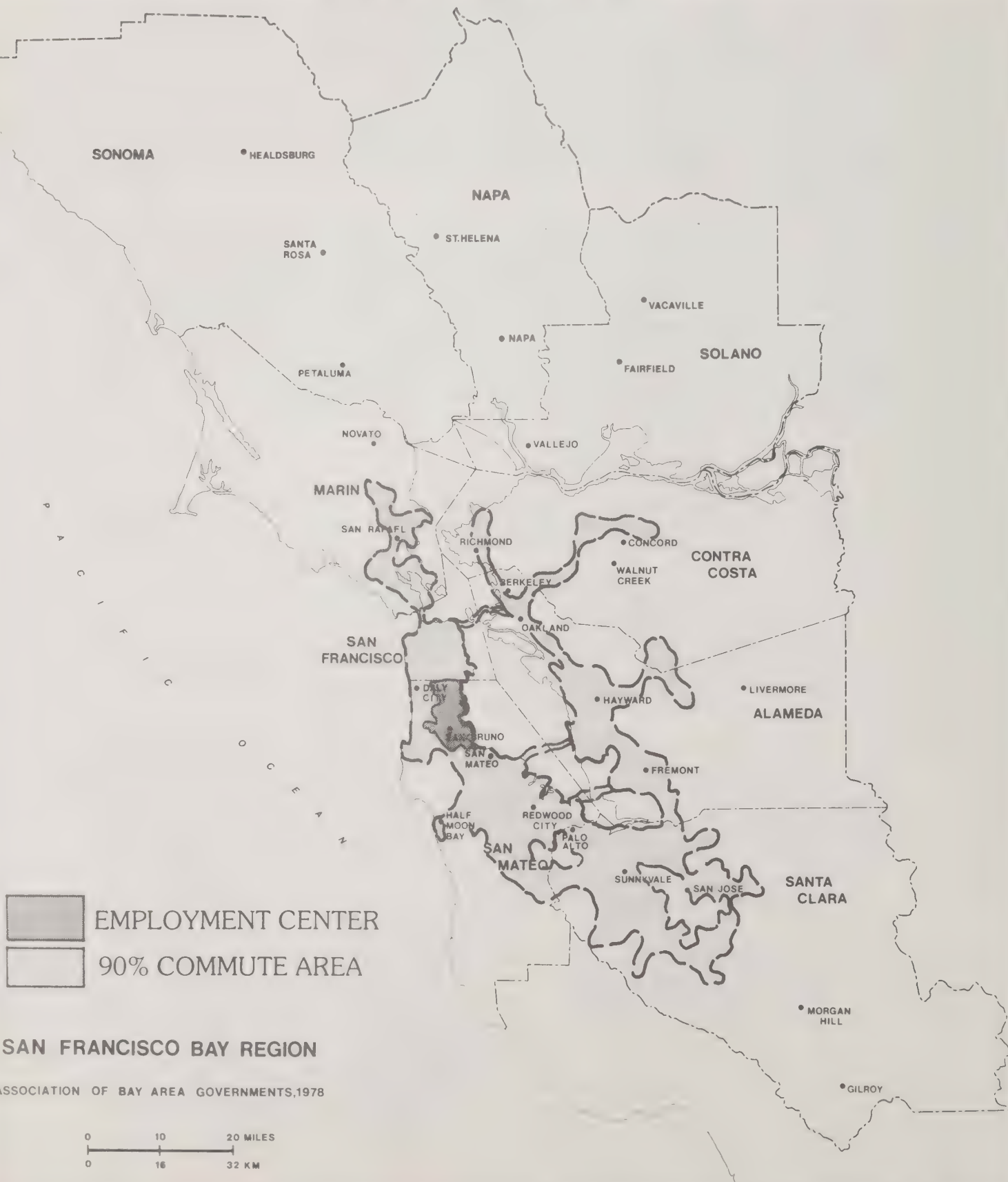
In 1970, only 26 percent of the people who worked in the South San Francisco-San Francisco Airport Employment Center also lived in this center (1). Figure 14.13-C shows the 90 percent commute area for the remaining 74 percent of employees in this center with an external ring. The internal shaded area is the employment center itself.

This employment center has experienced a large increase in jobs, most notably in the other local-serving sector. At the same time, the increase in housing units and household population has been close to regional growth rates. Housing costs have remained high.

The low proportion of people who both live and work in the employment center may be a result of the higher than median value housing in South San Francisco (1). Residents seek higher paying jobs outside the center and are aided by transit and transportation linkages. Most of the commuters to this center come from San Francisco, San Mateo County, most of Santa Clara County, and East Bay cities along freeways or near transit.

FIGURE 14.13-C

SOUTH SAN FRANCISCO SAN FRANCISCO AIRPORT COMMUTE AREAS



14.14 SAN MATEO-REDWOOD CITY

14.14.1 Introduction

The San Mateo-Redwood City employment center (Figure 14.14-A) supports diverse economic activities. The largest industrial employers in this area are Fluor Utah Incorporated, the Ampex Company, and Owens Illinois. Alumax, one of the country's 500 largest industrial companies, maintains its corporate headquarters in San Mateo (3). A significant element of this center's industrial base is the high-technology manufacturing industry. Although most high-technology firms are located to the south in the Palo Alto-Sunnyvale-Mountain View employment center, many are also located in the San Mateo-Redwood City center.

Public employment is also significant in this area. In 1975, federal and state government employment ranked below high-technology and wholesale trade as the third largest employment classification in this center. The center also supports most of the county governmental functions and is the location of most of the county offices. Major retail centers include the Hillside and Redwood Shores Shopping Centers as well as downtown Redwood City and areas along El Camino Real.

Highway 101 and I-280 provide access between this center and other urban communities north to San Francisco and south to San Jose. Highway 92 and the Dumbarton Bridge provide connections east to the cities in the East Bay. SAMTRANS provides public transit within this center and throughout the county. Southern Pacific provides passenger rail service north and south along the Peninsula.

14.14.2 Industrial Structure

The San Mateo-Redwood City employment center had almost four percent of the region's total employment and a little over three percent of the region's basic employment in 1978. This center experienced three percent of the region's total employment growth and a little over three percent of the region's basic employment growth over the 1965 to 1978 period. It showed steady growth in all employment categories between 1965 and 1978 (Table 14.14-1).

Basic manufacturing employment increased by 23 percent during this period with most of this increase concentrated in high-technology and metal fabrication, machinery, and transportation equipment. High-technology employment provided almost 12 percent of total jobs in 1975, and was the largest basic industrial employer. In the basic non-manufacturing sector, federal and state government showed the largest increase between 1965 and 1978. Long-distance transportation and wholesale trade employment also increased significantly during this period. With over eight percent of total jobs, wholesale trade ranked second to high-technology in its share of total employment.

In the other local-serving employment sector, professional services employment grew by over 33 percent between 1965 and 1978. This category includes health, education, and legal services. Although the increase

FIGURE 14.14-A

SAN MATEO — REDWOOD CITY EMPLOYMENT CENTER

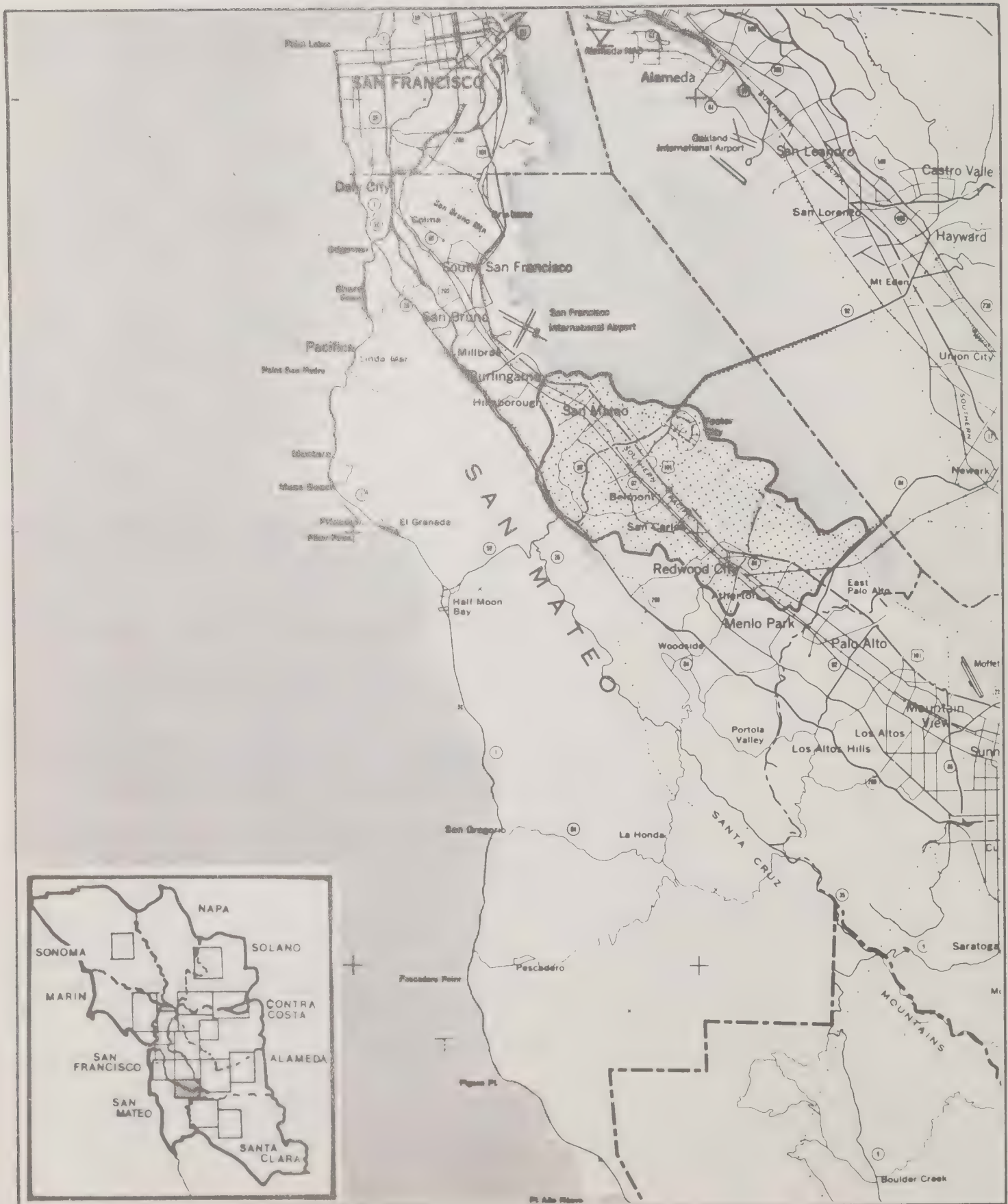
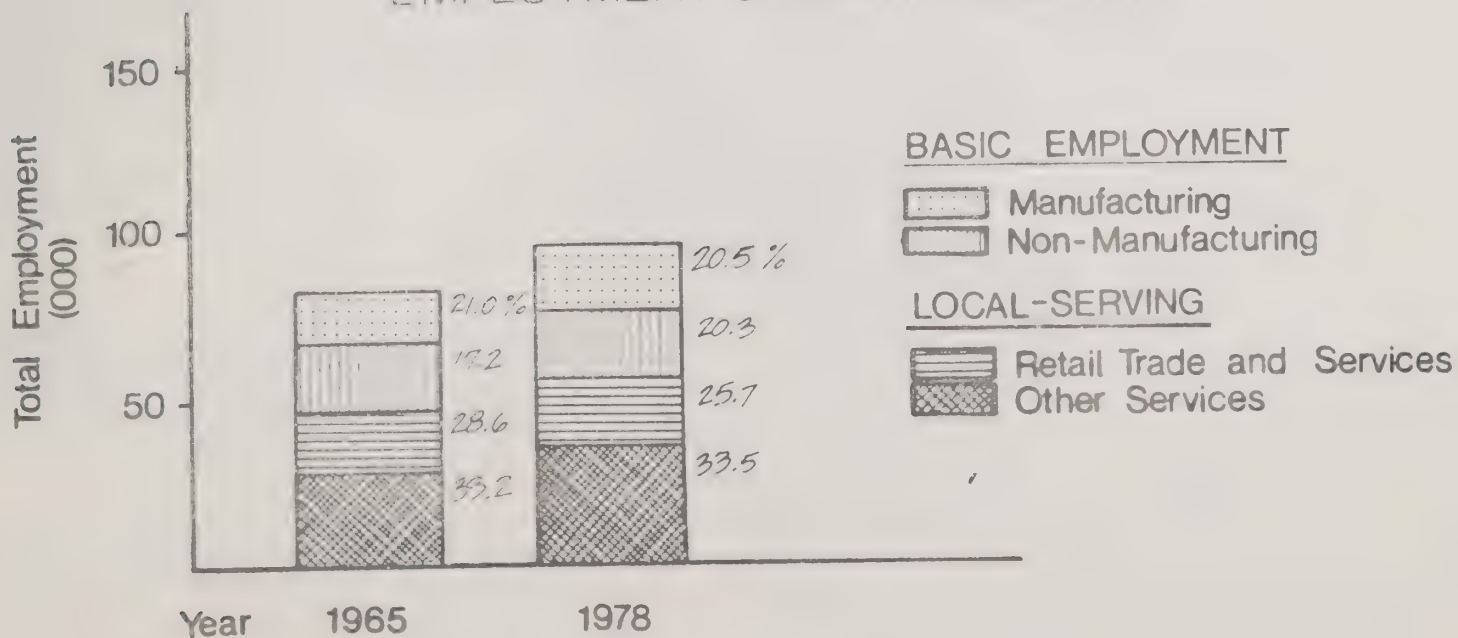


TABLE 14. 14-1
SAN MATEO-REDWOOD CITY ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	Empl. Change	Percent Change
Basic Manufacturing	14620.	21.0	18047.	20.5	3427.	23.4
Basic Non-Manufacturing	12025.	17.2	17858.	20.3	5833.	48.5
Retail Trade and Services	19977.	28.6	22697.	25.7	2720.	13.6
Other Local-Serving	23153.	33.2	29950.	33.5	6397.	27.6
Total	69775.	100.0	88152.	100.0	18377.	26.3

Source: ABAG Projections '79 data base.

FIGURE 14.14-B
SAN MATEO-REDWOOD CITY
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

in its share of total employment was not particularly large, the numerical increase (almost 2,500 jobs) compared favorably with the two basic industries showing the most growth (high-technology - 2,900 jobs and wholesale trade - 2000 jobs).

In the retail trade and services sector, retail trade showed a significant increase during this period, while retail services declined slightly.

14.14.3 Labor Force Commuting

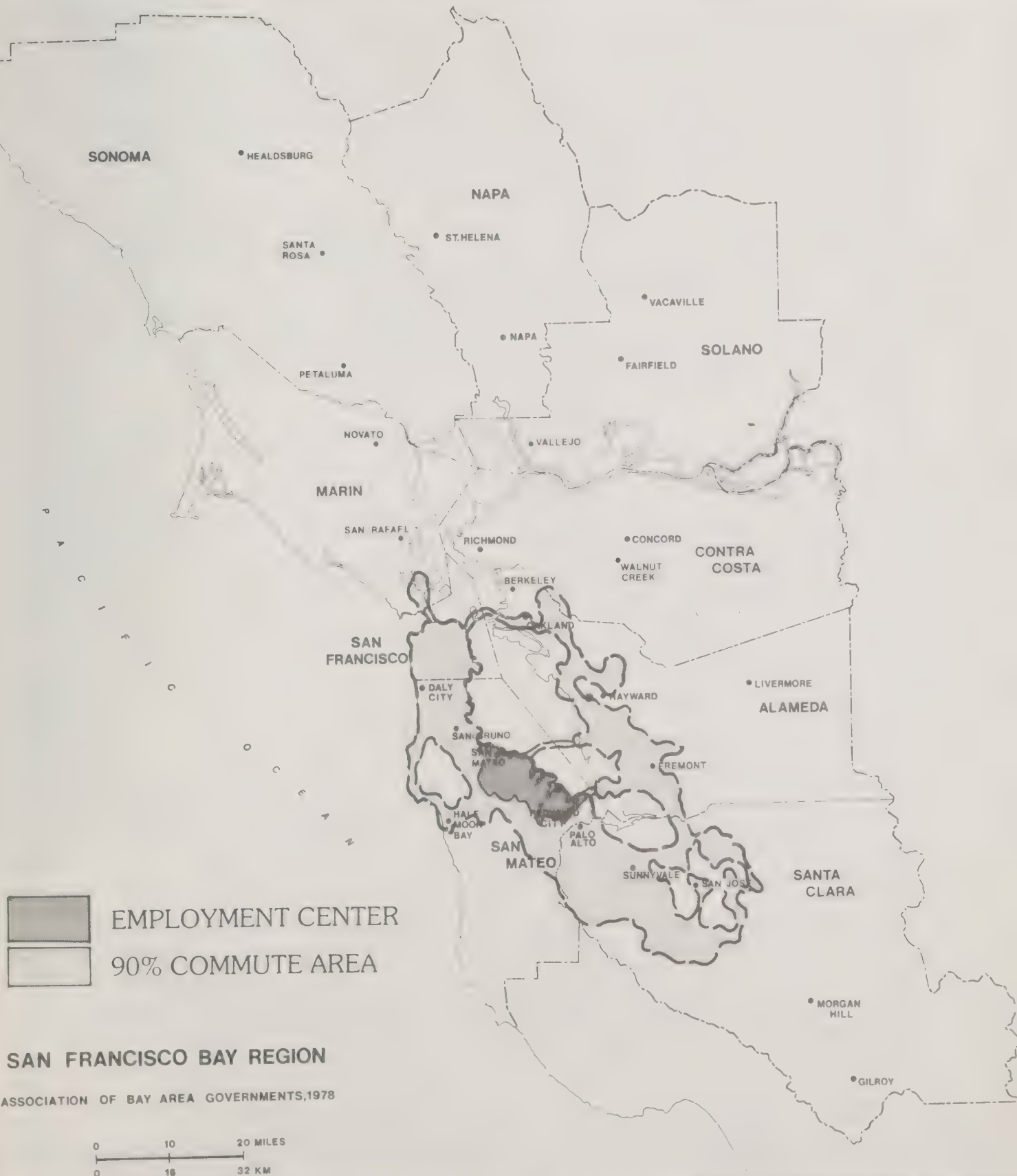
In 1970, origin-destination data showed that 52 percent of those who worked in the San Mateo-Redwood City employment center also lived there. Forty-eight percent commuted to work from outside the area. Ninety percent of the external commute came from throughout San Mateo County, San Francisco, northern Santa Clara County, and southern Alameda County (10). Figure 14.14-C shows this 90 percent commute area as an external ring, while the internal shaded area is the employment center itself.

Both population and job growth has been slow, hence it is unlikely that the proportion of commuters living and working in San Mateo-Redwood City has changed significantly in recent years. Countywide, the household population grew by 3.2 percent between 1970 and 1975. In southern San Mateo County (the housing market area which includes this employment center), the household population grew by only 0.4 percent during the same period (1). At the same time, total jobs in the employment center increased by 2.0 percent.

In terms of residential development, the San Mateo-Redwood City center is a built-up, mature urban area with little land available to accommodate new housing. It contains most of the available industrial land on the bayside of San Mateo County, and hence, as economic activity and job growth increases and in the absence of measures to increase the supply of affordable housing, more workers are likely to live outside this employment center. The accessibility of this employment center, via highway and transit, serves to facilitate increased commuting.

FIGURE 14.14-C

SAN MATEO — REDWOOD CITY COMMUTE AREAS



14.15 PALO ALTO-MOUNTAIN VIEW-SUNNYVALE

14.15.1 Introduction

The Palo Alto-Mountain View-Sunnyvale employment center (Figure 14.15-A) has a number of characteristics which support a concentration of high-technology industries. These factors are discussed in detail in Chapter 4 of this report, which includes a study of this industry. Santa Clara County's three largest employers, Stanford University, Lockheed, and Hewlett-Packard, are located in this center. It is also the location of the corporate headquarters for Fairchild Camera and Instruments, Envirotech, and Arcata National (3).

Consistent with the development patterns around the bay, both existing and vacant industrial lands are located in areas near the shoreline and on both sides of Highway 101. Additional industrial concentrations are located north and south of Stanford University. Most retail commercial uses are part of a long strip development along El Camino Real (Highway 82). Four regional shopping centers are located in this employment center: the Stanford Shopping Center, the Mayfield Mall, the San Antonio Shopping Center, and the Vallco Fashion Park (9).

The highway system serving this employment center provides access to other parts of Santa Clara County, San Mateo, San Francisco, and southern Alameda County. Highway 101 and I-280 are the major north-south commute routes running the length of the Peninsula to San Francisco. Highway 82, El Camino Real, runs parallel to these routes and serves as the major commercial throughfare in the area. Highway 85, the West Valley freeway, provides east-west access but only within this employment center. Route 237 and the Dumbarton Bridge connect the area to southern Alameda County. (Route 237 is to be upgraded to a 4 lane freeway and the Dumbarton Bridge is presently being improved). The Southern Pacific provides transit access from San Jose north to San Francisco, and the Santa Clara County Transit District operates throughout the county.

14.15.2 Industrial Structure

The Palo Alto-Mountain View-Sunnyvale employment center accounted for 12 percent of the region's total employment and 16 percent of the region's basic employment in 1978. Over the 1965 to 1978 period, this center attracted 22 percent of the region's total employment growth and 30 percent of the region's basic employment growth.

All four employment sectors showed substantial growth between 1965 and 1978, such that their shares of total center employment remained relatively stable. In both 1965 and 1978, basic manufacturing and basic non-manufacturing employment together accounted for over 60 percent of employment in this center, while the retail trade and services and the other local serving sectors together accounted for 40 percent (Table 14.15-1).

FIGURE 14.15-A

PALO ALTO—MT. VIEW—SUNNYVALE EMPLOYMENT CENTER

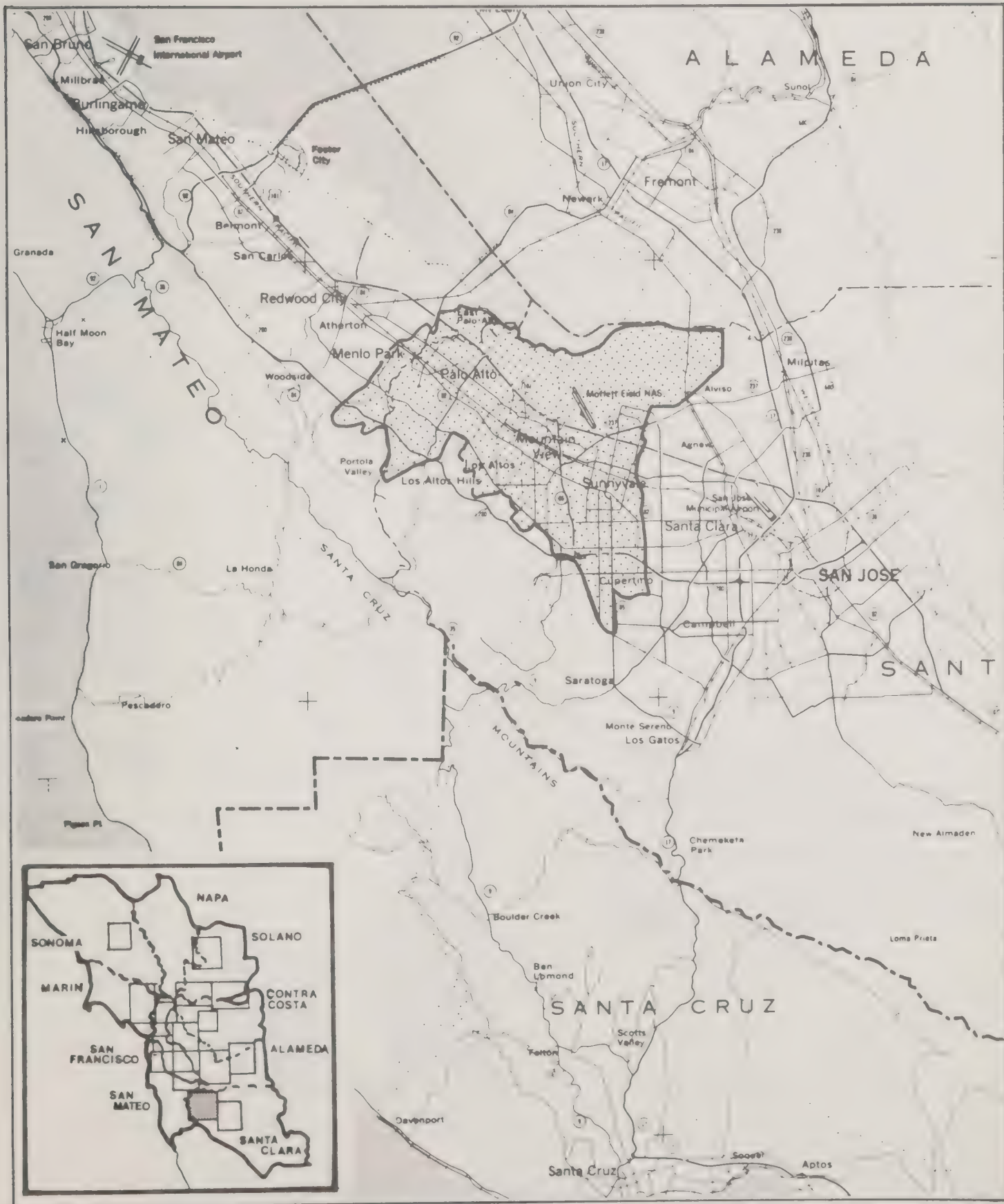
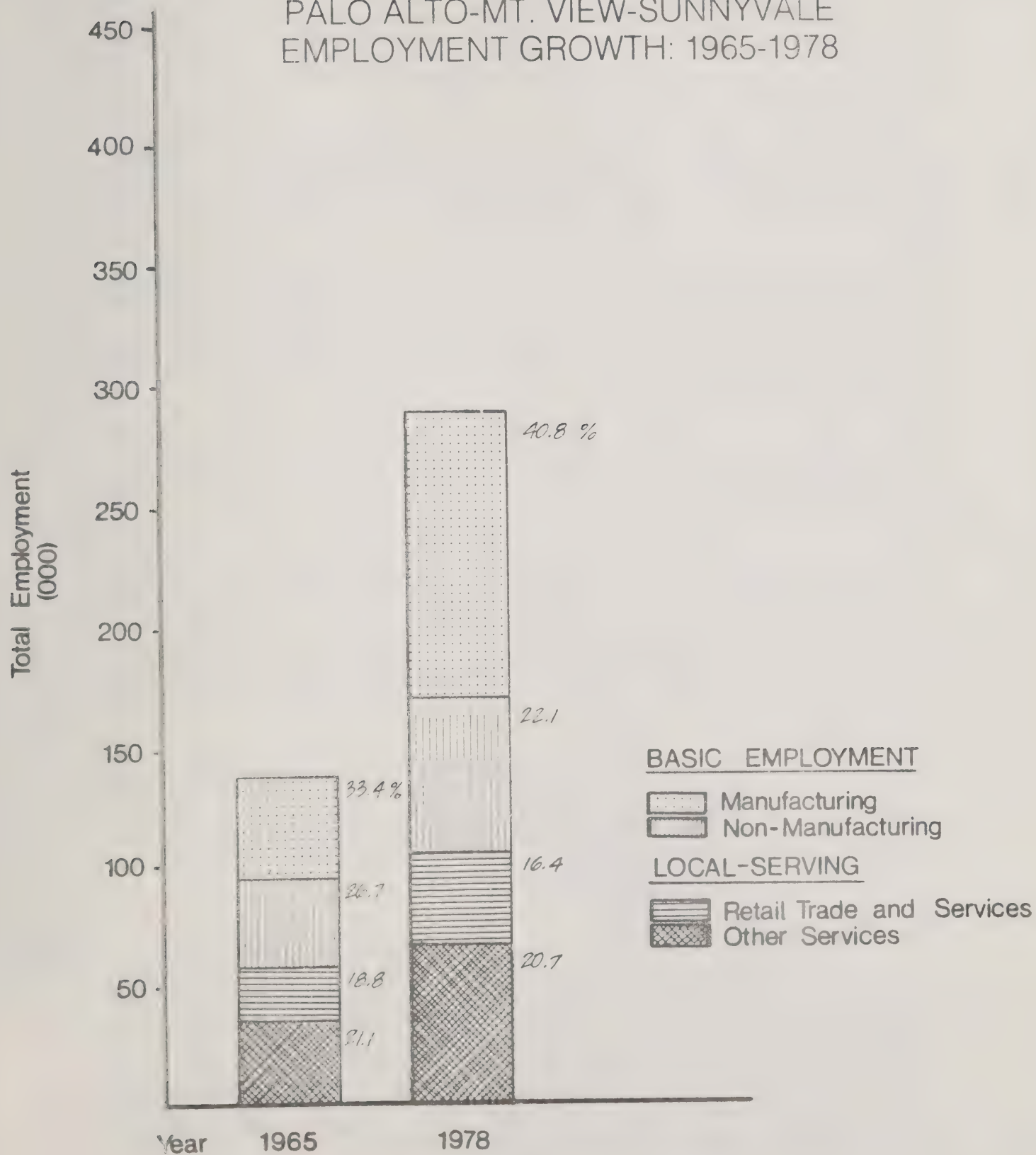


TABLE 14. 15-1
PALO ALTO-MT. VIEW-SUNNYVALE ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	EmPLY. Change	Percent Change
Basic Manufacturing	47513.	33.4	113394.	40.8	65881.	138.7
Basic Non-Manufacturing	37915.	26.7	61385.	22.1	23470.	61.9
Retail Trade and Services	26707.	18.8	45563.	16.4	18856.	70.6
Other Local-Serving	30044.	21.1	57466.	20.7	27422.	91.3
Total	142179.	100.0	277808.	100.0	135629.	95.4

Source: ABAG Projections '79 data base.

FIGURE 14.15-B
PALO ALTO-MT. VIEW-SUNNYVALE
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

The Palo Alto-Mountain View-Sunnyvale employment center is the region's center for high-technology manufacturing. In 1975, high-technology was by far the largest single employment classification, accounting for 34 percent of the center's total employment. It represented over half of the center's basic employment, and over 80 percent of basic manufacturing employment. In the period 1965 to 1978, employment in this classification increased by over 35,000 jobs.

Basic manufacturing employment more than doubled between 1965 and 1978. Within this category, printing and publishing (96 percent), heavy industry (92 percent), high-technology (89 percent), and miscellaneous manufacturing (81 percent), showed the most growth between 1965 and 1978.

Basic non-manufacturing employment's share of total employment decreased between 1965 and 1978. Classifications showing the largest percentage growth in this category were business services, institutional services, and wholesale trade. Business services employment increased by 7,700 jobs between 1965 and 1978, the largest numerical increase in the basic non-manufacturing sector.

In the two local-serving sectors, retail services and professional services both increased employment by over 100 percent between 1965 and 1978. Increases in retail trade and other local-serving classifications were on a more modest scale.

A recent survey of the expansion plans of manufacturing firms in Santa Clara County projects a 24 percent increase in employment between 1979 and 1981 and a 49 percent increase between 1979 and 1985. More than half of these increases were estimated to occur in Sunnyvale, Santa Clara, Cupertino, and Campbell. About 20 percent of the growth is anticipated in Palo Alto and Mountain View. The survey indicates that companies with less than 4,000 employees project a higher employment growth rate than larger companies(8).

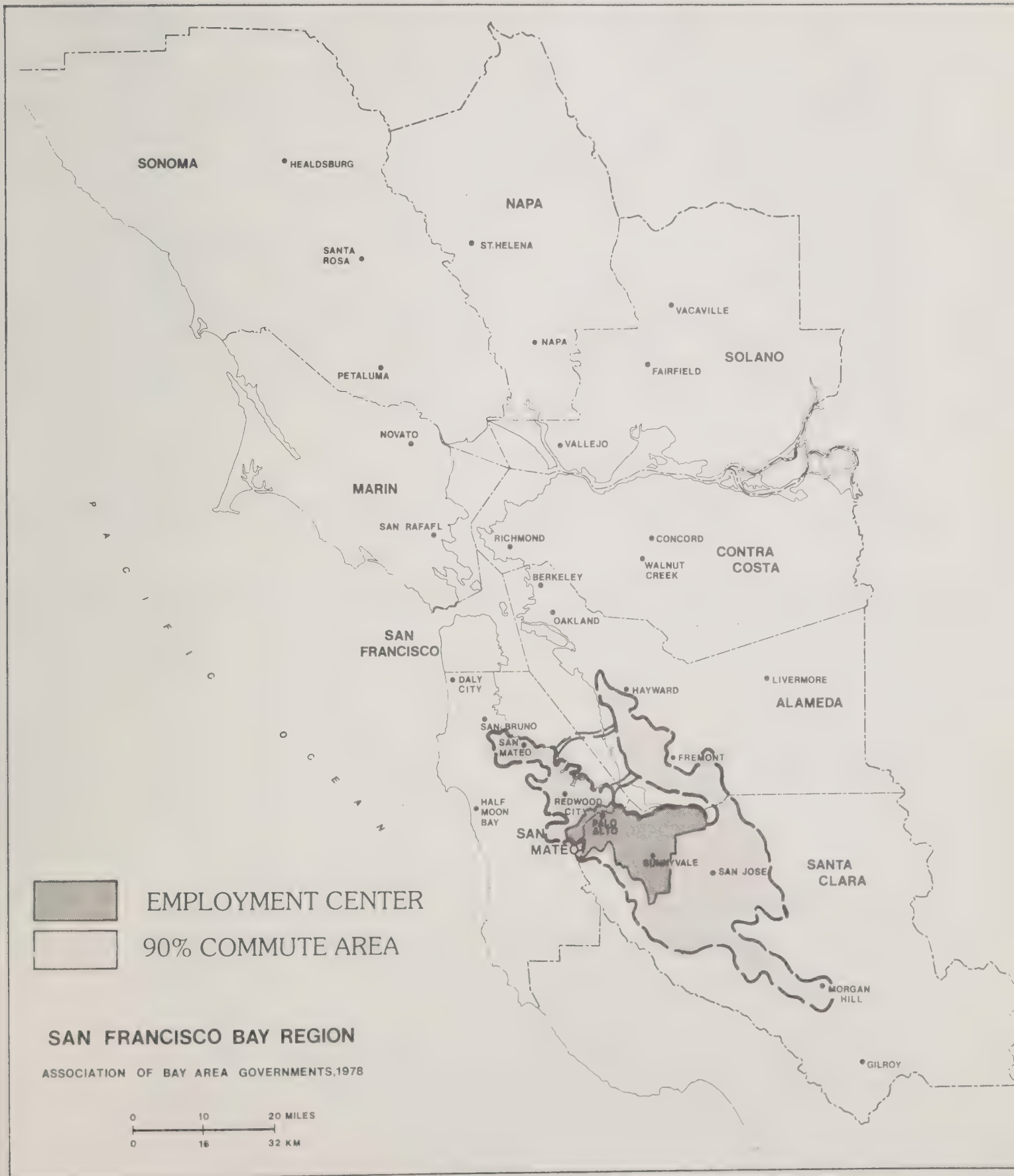
The major commercial expansion for this center is the construction of Sunnyvale Town Center in the City's redevelopment area, which represents an addition of 675,000 square feet of gross leasable retail space. Expansion is also occurring at existing regional shopping centers: San Antonio (32,000 sq. ft.) and the Stanford Shopping Center (200,000 sq. ft.) (8).

14.15.3 Labor Force Commuting

In 1970, 52 percent of all commute trips to the Palo Alto-Mountain View-Sunnyvale employment center originated from within the area. In Figure 14.15-C, the outer ring, encompassing most of urbanized Santa Clara County and parts of southern Alameda and San Mateo Counties, designates the area from which 90 percent of the external commute trips originated. The internal shaded area designates the employment center itself. Peak-hour travel times range from a high of 18 minutes within the employment center to almost 40 minutes or more from the most distant parts of the 90 percent commute area.

FIGURE 14.15-C

PALO ALTO—MT. VIEW—SUNNYVALE COMMUTE AREAS



Origin-destination data for this employment center indicated that the areas which generated the most commute trips to the center were those immediately adjacent to the interior ring, and areas in north and central San Jose. Since 1970, population growth has slowed while economic growth has continued to be dynamic in the Palo Alto-Mountain View-Sunnyvale center. During the same period, residential growth has occurred in suburban communities west of San Jose and in south San Jose. These development trends suggest that currently a larger proportion of the people employed in the center probably commute from the rapidly developing residential areas outside the center than in 1970.

This employment center has a competitive edge for high-technology industry because of the tendency for firms to locate in proximity to each other. One potential drawback, however, is the lack of housing. In the past, one of the attractions of this center was that housing was widely available and that commuting was therefore relatively easy. If local development policies remain unchanged, the lack of an adequate housing supply may ultimately lead to a loss of high-technology industry to areas which have available housing, and are competing for this type of development.

14.16 SANTA CLARA-SAN JOSE

14.16.1 Introduction

The Santa Clara-San Jose employment center (Figure 14.16-A) is an area of diversified economic activity. Total employment grew in all four general sectors between 1970 and 1978. Santa Clara supports a concentration of electronics firms, including the corporate headquarters of Memorex and National Semiconductor. The largest industrial employers in San Jose are General Electric, IBM, and FMC. California Financial, one of the nations largest non-industrial companies, has its corporate headquarters in San Jose. Industry is concentrated in north San Jose and in the Coyote area (3).

Major retail centers are dispersed throughout the area. Seven regional shopping centers serve area residents, the largest of which are the Eastridge Mall, Valley Fair, and Westgate Shopping Centers, all in San Jose. In 1975, San Jose and Santa Clara ranked first and second, respectively, in taxable retail sales among Santa Clara County cities. Combined, taxable retail sales accounted for about 50 percent of the county total in the same year (7).

Most office developments are in San Jose, in several locations. The San Jose Metro Center and North First Street-Alameda areas are in central and north San Jose, and others are spread among more recently developed suburban parts of the city (6). New office development is planned in yet another area, the downtown San Antonio Redevelopment Area.

Major highway facilities serving this area include Highway 17 linking San Jose to Santa Cruz to the southwest and to Oakland, Berkeley, and Richmond to the northeast; I-680 which provides access northeast to the Livermore Valley, Central Contra Costa County, Solano County and Sacramento via I-80; and Highway 101 and I-280, the major north-south arteries linking San Jose to San Mateo and San Francisco the north, and to Los Angeles in the south.

Transit service is provided by the Santa Clara Transit District, and passenger rail service between San Jose and San Francisco by Southern Pacific. The San Jose Airport provides air passenger and cargo transportation.

14.16.2 Industrial Structure

The Santa Clara-San Jose employment center had almost 11 percent of the region's total employment and a little over 11 percent of the region's basic employment in 1978. Over the 1965 to 1978 period, this center experienced almost 18 percent of the region's total employment growth and almost 21 percent of the region's basic employment growth.

Both basic manufacturing and basic non-manufacturing employment increased by more than 100 percent between 1965 and 1978. The retail trade and services and other local-serving sectors increased by more than 47 percent and 76 percent, respectively, during this period.

SANTA CLARA—SAN JOSE EMPLOYMENT CENTER



The employment shares shown in Table 14.16-1 reflect diversified employment opportunities in this employment center. While all categories of employment have shown increases, the shares of total employment have not changed dramatically.

In 1978, the basic manufacturing sector provided almost 30 percent of total employment, up from 26 percent in 1965. High-technology and metal fabrication, machinery and transportation equipment provided the largest manufacturing employment increases, between 1965 and 1978. During this period, the metal fabrication, machinery, and transportation equipment classification became the largest single employment classification, providing 10 percent of total jobs in 1975. In large part, the strength of these industries increased largely because of the location of IBM in south San Jose. High-technology growth has centered in Santa Clara.

Food processing and miscellaneous manufacturing showed significant employment decreases between 1965 and 1978, with food processing's share of total employment dropping from nine percent to two percent. In 1965, food processing had been the largest basic employer.

The most notable basic non-manufacturing employment sector increases occurred in business services and wholesale trade. Federal and state government employment decreased by more than three percent during the 13 year period.

As noted above, the other local-serving sector showed significant employment increases (76 percent) between 1965 and 1978. This sector consists of health, education, and legal services as well as construction, transportation, communication services, local government, and local financial and real estate services.

14.16.3 Labor Force Commuting

In 1970, origin-destination data showed that 68 percent of all commute trips were from within the Santa Clara-San Jose employment center. The remaining 32 percent came from outside the area, primarily from within Santa Clara County but also extending into southern San Mateo and Alameda Counties (10). Ninety percent of the external commute came from the areas within the exterior ring in Figure 16.16-C. The internal shaded area designates the employment center itself.

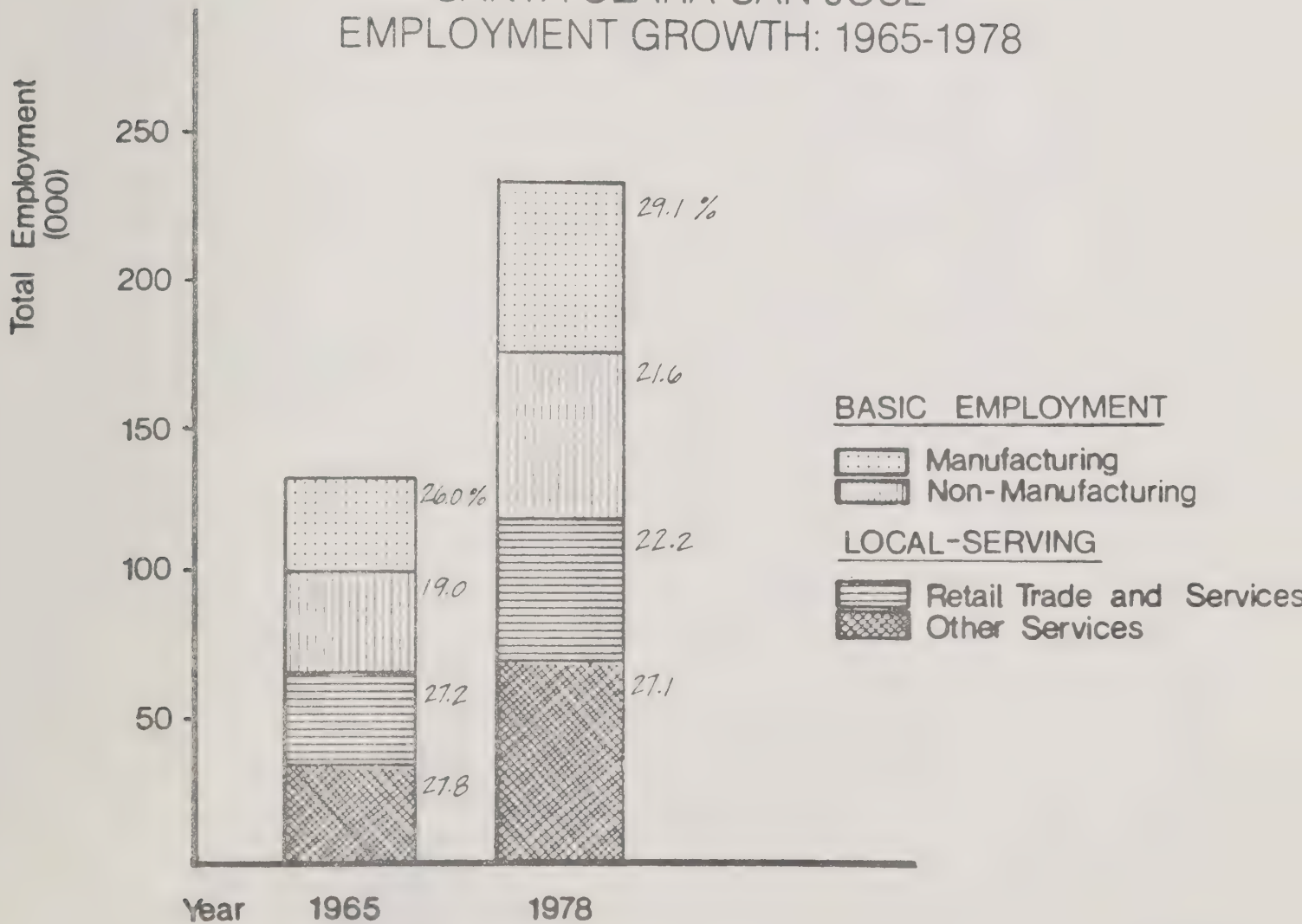
The 1970 origin-destination data indicated that most external trips were from the Santa Clara County cities of Mountain View, Sunnyvale, Palo Alto, Cupertino and Milpitas. Since 1970, however, new residential development has occurred, primarily in southern Santa Clara County. Data show more commute trips now originate in this area. This is especially true since housing and population growth has slowed in the North County area. The Fremont area in southern Alameda County, where residential growth was more than twice the rate of employment growth between 1970 and 1975, probably houses more Santa Clara-San Jose workers than it did in 1970.

TABLE 14. 16-1
SANTA CLARA-SAN JOSE ECONOMIC STRUCTURE

Economic Structure	1965		1978		1965-1978	
	Employment	Percent	Employment	Percent	EmPLY. Change	Percent Change
Basic Manufacturing	34977.	26.0	70916.	29.1	35939.	102.7
Basic Non-Manufacturing	25553.	19.0	52608.	21.6	27055.	105.9
Retail Trade and Services	36600.	27.2	54011.	22.2	17411.	47.6
Other Local-Serving	37370.	27.8	66021.	27.1	28651.	76.7
Total	134500.	100.0	243556.	100.0	109056.	81.1

Source: ABAG Projections '79 data base.

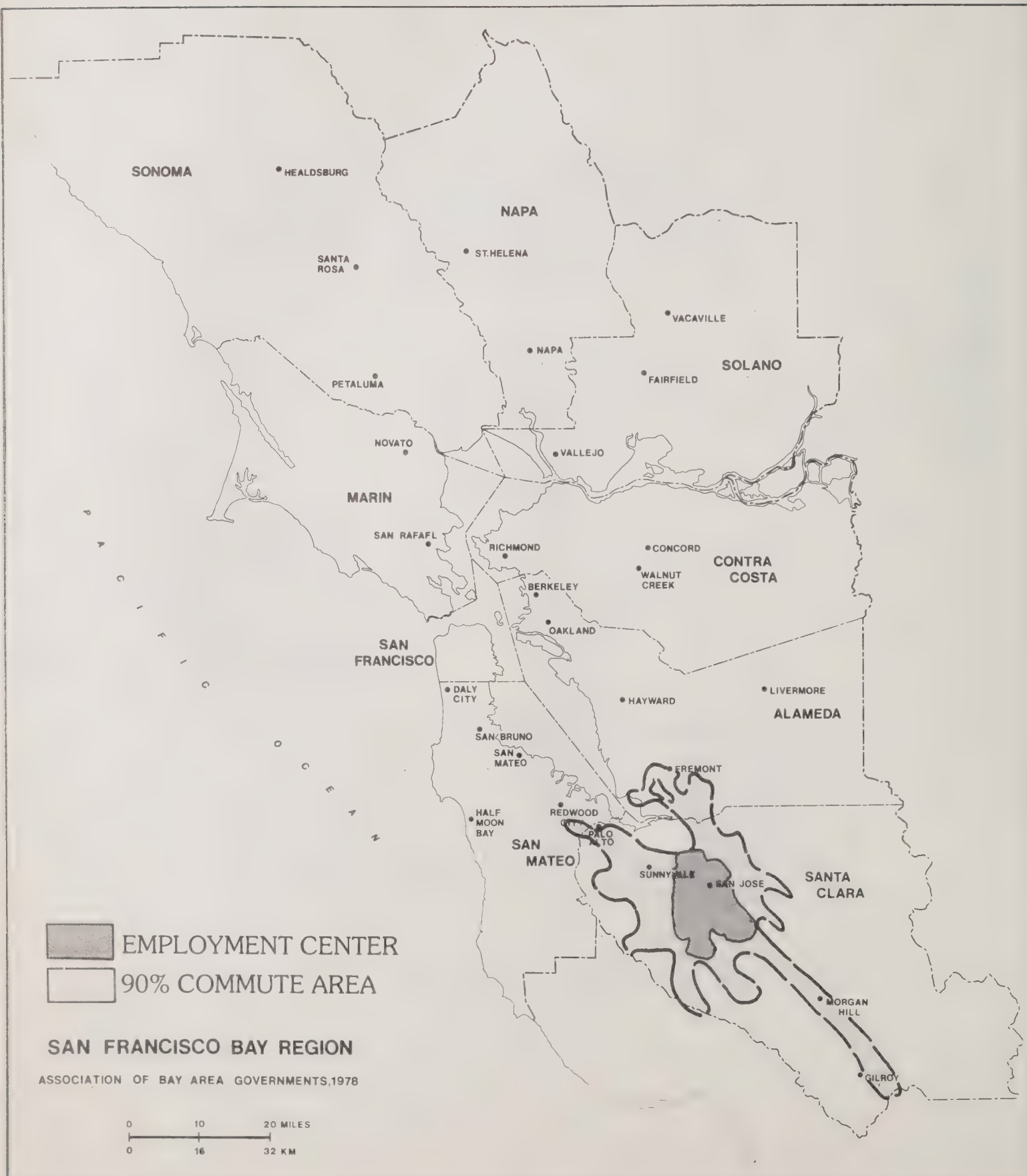
FIGURE 14.16-B
SANTA CLARA-SAN JOSE
EMPLOYMENT GROWTH: 1965-1978



Source: ABAG Projections '79 data base

FIGURE 14.16-C

SANTA CLARA—SAN JOSE COMMUTE AREAS



It should be noted that housing conditions vary greatly in San Jose and Santa Clara. San Jose is providing a diversity of new housing opportunities and trying to attract economic development to achieve a balance between housing and jobs. Santa Clara continues to attract economic growth in excess of its capacity to provide housing for workers. Hence, an increasing number of Santa Clara workers reside outside the employment center.

14.17 REFERENCES

- (1). Association of Bay Area Governments, 1970-1975 San Francisco Bay Area Housing Profile, Berkeley, November, 1977.
- (2). Contra Costa County Planning Department, 1979 Population Estimates, Martinez, 1979.
- (3). "Fortune's Directory of the 1,000 Largest U.S. Industrial Corporations: 1978," Fortune, May 7, 1979 and June 18, 1979.
- (4). John Blaney Associates, Sonoma Countywide Industrial/Commercial Study, San Francisco, May 24, 1979.
- (5). Marin County Planning Department and ABAG, Technical Report # 1: Housing, Population, and Employment Projections for the City-Centered Corridor, San Rafael, August, 1979.
- (6). San Jose, City of, Office of Economic Development, Metro Office Space Development, San Jose, 1975.
- (7). San Jose Mercury and News, 1976/77 Shopping Center Guide, San Jose, August, 1977.
- (8). Santa Clara County Manufacturing Group, Jobs/Housing Task Force, Estimate of Job Growth and Building Expansion of Sixty Santa Clara County Companies 1979-1985, Santa Clara, July 11, 1979.
- (9). U.S. Department of Commerce, Bureau of the Census, 1972 Census of Retail Trade: Major Retail Centers in Standard Metropolitan Statistical Areas, California, Washington, 1974.
- (10). U.S. Department of Commerce, Bureau of the Census, Urban Transportation Planning Package, Washington, 1973, unpublished.

ACKNOWLEDGMENTS

PROJECT SPONSORS

ABAG is a voluntary association of the local governments in the nine-county San Francisco Bay Area. It was established in 1961 to address regional problems through the cooperative action of member cities and counties; at present 88 of the 93 cities and eight of the nine counties in the region are members. Twenty-five special districts, regional agencies, and other government agencies are non-voting, cooperating members.

ABAG is the areawide comprehensive planning agency for the Bay Area, and is the designated A-95 agency responsible for reviewing Federal grant applications from within the region. ABAG's approved Regional Plan provides a policy guide for planning of the region's economic development, environmental quality, health, housing, recreation, safety and transportation.

The Bay Area Council is a private, nonprofit organization involved in economic and environmental policies concerning the nine-county San Francisco Bay Area. Established in 1945, the Council is supported by nearly 300 major corporations headquartered or located in the Bay Area. Its program focuses on regional issues in the categories of economic vitality, environmental quality, regional planning and land use, transportation and governmental organization. The Council is an active participant in the regional public policy arena on behalf of the Bay Area business community; its activities include research, consensus-building, advocacy and communications.

The Bay Area Economic Profile was prepared using funds from two sources:

- A grant received by ABAG through the 302 (a) Metropolitan Economic Development Planning Assistance Demonstration Program of the Economic Development Administration, U.S. Department of Commerce.
- The Bay Area Council.

PROJECT MANAGEMENT

Revan A. F. Tranter, Executive Director, ABAG

Angelo J. Siracusa, President, Bay Area Council

Stan Hoffman, ABAG Co-Project Director

Greg Moore, Bay Area Council Co-Project Director,
Pacific Telephone and Telegraph Company

REPORT PREPARATION

Principal Authors: Stan Hoffman
Dennis Wambem
Marcine Osborn
William Goldner

Project Staff: Mark Alpers
Norma Weisner
Chin Ming Yang
Rune Carlson
Marci Loss
Brigitte Stelling

Editing: Joyce McReynolds

Graphics: Ross Turner
Merrilee Ollendick
Pat Shen Yoshitsu

Word Processing: Yvonne McGough
Audrey Will

Printing: Julie Catalano

ADVISORY COMMITTEE

Robert K. Arnold
Director and Senior Economist
Center for the Continuing Study of
the California Economy

Wesley McClure
Former City Manager
City of San Leandro

Sara Behman
Chief, Division of Labor Statistics
and Research
California Department of Industrial
Relations

James Neto
Manager, Coastal Area Labor Market
Information
California Employment Development
Department

Walter Blumst
Coordinator of Administrative Services
Pacific Gas and Electric Company

Terry Orr
Senior Economist
Pacific Telephone and Telegraph
Company

Daniel T. Daggett
Vice President and General Manager
Southern Pacific Industrial
Development Company

Walter Postle
Chief, Management Data Systems
and Analysis
U.S. Department of Labor, Employment
and Training Administration

Peter Giles
President
Santa Clara County Manufacturing Group

Willard F. Sprague
Assistant Vice President and
Regional Economist
Wells Fargo Bank, NA

George Goldman
Economist
Cooperative Extension Service
University of California, Berkeley

Donald L. Tatzin
Consultant
Arthur D. Little, Inc.

Thomas R. Graves
Vice President
Security Pacific National Bank

Eric P. Thor, Jr.
Vice President and Senior Economist
Bank of America, NT&SA

U.C. BERKELEY LIBRARIES



C124924104



Hotel Claremont
Berkeley, CA 94705
(415) 841-9730

BAY AREA COUNCIL

348 WORLD TRADE CENTER
SAN FRANCISCO 94111
(415) 981-6405